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ABSTRACT

The workshop provided an opportunity for U.S. technical specialists and policy makers to review the growing body of information on the Chinese population and to discuss ways to promote collaborative population research involving both Chinese and American experts. Demographic research is the focus of the papers in part 1. Current prospects for demographic research, as well as needs and possibilities in the field, are discussed. Estimates of completeness of death recordings in the Chinese sample survey of 1972-75 and Chinese population trends and policy are examined. Biomedical research is the topic of part 2. Also, research needs and the 1978 perinatal study in Tientsin are discussed. Papers in parts 3 and 4 treat research on family planning and marriage and family. Collaborative U.S. and Chinese research is the focus of the papers in the concluding section. Appendices contain guidelines for cooperation in the science and technology of medicine and public health, a descriptive outline of collaborative population projects, and a list of workshop participants. (RM)

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COMMITTEE ON
POPULATION AND DEMOGRAPHY

Research on the Population of China: Proceedings of a Workshop

Robert J. Lapham and Rodolfo A. Bulatao, Editors
Committee on Population and Demography
Assembly of Behavioral and Social Sciences
National Research Council

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This report has been reviewed by a group other than the authors according to procedures approved by a Report Review Committee consisting of members of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

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COMMITTEE ON POPULATION AND DEMOGRAPHY

ANSLEY J. COALE (Chair), Office of Population Research, Princeton University
WILLIAM BRASS, Centre for Population Studies, London School of Hygiene and Tropical Medicine
LEE-JAY CHO, East-West Population Institute, East-West Center, Honolulu
RONALD FREEDMAN, Population Studies Center, University of Michigan
NATHAN KEYFITZ, Department of Sociology, Harvard University
LESLIE KISH, Institute for Social Research, University of Michigan
W. PARKER MAULDIN, Population Division, The Rockefeller Foundation, New York
JANE MENKEN, Office of Population Research, Princeton University
SAMUEL PRESTON, Population Studies Center, University of Pennsylvania
WILLIAM SELTZER, Statistical Office, United Nations
CONRAD TAEUBER, Kennedy Institute, Center for Population Research, Georgetown University
ETIENNE VAN DE WALLE, Population Studies Center, University of Pennsylvania

ROBERT J. LAPHAM, Study Director

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Preface

Since the early 1970s the population research community of the United States has been increasingly interested in learning more about population trends in the People's Republic of China. Scholars in the United States and elsewhere have a natural and compelling interest in the largest population in the world, one that accounts for roughly one-fifth of all humanity. They are curious about programs in the People's Republic of China to reduce infant and child mortality, new types of contraceptives, family formation, the organization of birth-planning programs, and assessments of levels and trends of vital rates in recent decades.

The workshop on population research in the People's Republic of China, held at the National Academy of Sciences (NAS) in Washington, D.C., October 28, 1980, was in expression of the continued concern of the Academy with population questions and with promoting scientific interchange with Chinese scholars. The workshop was organized by the Committee on Population and Demography in the Assembly of Behavioral and Social Sciences, with assistance from the Committee on Scholarly Communication with the People's Republic of China.

In summer 1980 a request came from the Bureau of Oceans and International Environmental and Scientific Affairs of the U.S. Department of State to the Committee on Population and Demography to organize this workshop. Funds were provided under contract no. 1751-000370. The purposes of the workshop were to share information on and discuss possibilities for population research on the People's Republic of China. Discussion at the workshop began with invited presentations on selected topics, including reproductive biology and contraceptive technology, demographic estimation, and the nature and effectiveness of population policies. The workshop provided an opportunity for technical specialists and policy makers in the United States to review the growing body of information on the Chinese population and to discuss ways to promote collaborative population research involving both Chinese and American experts.

The Committee on Population and Demography was established in April 1977 by the National Research Council, in response to a request by the Agency for International Development (AID) of the U.S. Department of State. The committee has undertaken three major tasks:

(1) to evaluate available evidence and prepare estimates of levels and trends of fertility and mortality in selected developing nations;
(2) to improve the technologies for estimating fertility and mortality when only incomplete or inadequate data exist (including techniques of data collection); and
(3) to evaluate the factors determining the changes in birth rates in less-developed nations.

Given the magnitude of these tasks, the committee concentrated its initial efforts on the first two tasks; it began work on the third task in 1979. Reports published by the committee to date are listed on the inside back cover; several others are currently in press. As of mid-1981, 162 population specialists, including 89 from developing countries, have been involved in the work of the committee as members of panels or working groups.

The Committee on Scholarly Communication with the People's Republic of China (CSCPRC) was founded jointly in 1966 by the American Council of Learned Societies, the National Academy of Sciences, and the Social Science Research Council. The committee represents American scholars in the natural, medical, and engineering sciences as well as in the social sciences and humanities. It advises individuals and institutions on means of communicating with their Chinese colleagues, on China's international, scientific, and scholarly pursuits. The members of the committee are scholars from a broad range of fields, including China studies. The committee administers on behalf of the United States government the National Program for Advanced Study and Research in China and manages the programs under an agreement of the National Academy of Sciences and the Chinese Academy of Sciences. The work of several participants in the national program who have conducted population research in China is reported on in more detail in the workshop presentation by Mary Bullock.

The papers and proceedings in this workshop report give a snapshot of the state of research on China's population and suggest the expanding potential for future exchanges and collaborative work. Readers may also be interested in the papers presented at another meeting held to discuss population questions on the People's Republic of China. The China Population Analysis Conference was held at the East-West Population Institute, Honolulu, Hawaii, May 19-23, 1980. Further information on that conference can be obtained from the East-West Population Institute, 1777 East-West Road, Honolulu, Hawaii 96848.

In his introductory remarks that opened the workshop, Richard E. Benedick noted that an official U.S. delegation might visit China during 1981 to discuss exchanges on population sciences, including demographic and social science research as well as biomedical research. Subsequent to the workshop the Chinese Family Planning Leading Group (now upgraded to the Family Planning Commission of the State Council) suggested that two U.S. delegations visit China during 1981, one for biomedical topics related to population and the other for population sciences topics that are under subject areas covered by the social sciences, demography, and family planning. Ambassador Benedick led the Population Research Delegation of five persons in April 1981, which discussed with Chinese officials possible activities in the latter subject areas. Dr. Corfman was scheduled to lead a second delegation a little later in 1981, to discuss biomedical topics.

The papers in this volume are organized under four general headings: demographic research, biomedical research, family planning research, and research on marriage and the family. The open discussion at the workshop was largely devoted to issues of research collaboration and it is summarized under that heading.

The papers presented and the ideas discussed at the workshop represent the views of the authors and participants, who participated in the workshop in their individual capacities. These views do not necessarily reflect those of the members of the Committee on Population and Demography nor of the organizations with which authors and participants are affiliated. Appendix C lists the affiliations of workshop participants.

The pinyin system of romanization is used in this report except for reprinted articles and referenced materials that were published initially using the Wade-Giles system.

The committee expresses its thanks to Brenda Buchbinder, administrative assistant, and Robert Lapham, study director, who were largely responsible for the organization of the workshop. The committee also thanks Halsey Beemer of the Committee on Scholarly Communication with the People's Republic of China for his assistance and advice. Rodolfo Bulatao undertook the task of editing the papers and summarizing the discussions. Christine L. McShane edited the manuscript for publication. Thanks are due to all of these people and to Benita A. Anderson and Solveig M. Padilla, who assisted with typing the manuscript.

Finally, the committee expresses its sincere appreciation to the scholars who prepared presentations for the workshop. With only a few weeks' notice these people made timely contributions that were appreciated by all the workshop participants.

Ansley J. Coale, Chair
Committee on Population and Demography

Opening Remarks

Richard E. Benedick

It is indeed a pleasure to welcome you to this workshop on population research in the People's Republic of China. Your presence here is recognition of the importance of the topic, and of the broad interest of the U.S. population research community in the further development of cooperation between the United States and China.

This workshop is a logical follow-up to an initial meeting on U.S.-China exchanges in population sciences held at the U.S. Department of State, in collaboration with the U.S. Department of Health and Human Services, on August 7, 1979. At that time approximately 50 scholars and administrators from around the country reviewed ongoing cooperative activities, discussed possibilities for future bilateral exchanges, and examined the potential role of the U.S. government in such exchanges within the context of the new U.S.-China Agreement for Cooperation in Science and Technology.

The U.S. Department of State is sponsoring this workshop because we regard scientific cooperation with China as a particularly fruitful and significant element of our foreign policy. Such cooperation in the area of population has special symbolic value, even beyond the substantive gains to knowledge that can be expected. It is a demonstration to the international community of the vital importance of the modern phenomenon of population growth--and brings together the United States, which has the world's largest population assistance and research programs, and China, which has the world's largest population, and has done more than any other country in facing up to the implications of rapid population growth.

I am especially pleased that those in attendance represent many different population-related subjects--from the frontiers of biomedical research to demography and census, social science research, and foreign aid administration. I believe that there is much to learn in each of these areas, and I think that the U.S. population community clearly has an interest in cooperation with the Chinese in a broad range of population activities.

The subject of population currently appears in the official documentation between the two governments under the medicine and public health protocol between the U.S. Department of Health and Human Services and the Chinese Ministry of Public Health, under the basic overall Agreement for Cooperation in Science and Technology. Initially, the topic of reproductive physiology and family planning techniques was not on the first-priority list for cooperative research; recently, however, there have been indications that the Chinese would like to undertake official discussions on this subject. Reflecting our interest in a broad range of cooperation, we have communicated to the Chinese government a proposal to rename the subject "population sciences," including demographic and social science research as well as the originally contemplated biomedical research. The Family Planning Leading Group of the Chinese State Council has informed us that it would like to host an official U.S. delegation on these subjects in spring 1981, a delegation in which Dr. Corfman, of the U.S. Department of Health and Human Services, and myself are planning to participate. (See the paragraph in the preface concerning subsequent action on the development of population sciences exchanges between the two countries.) Therefore, the deliberations of this group today are of great interest to us and of direct relevance to the forthcoming mission.

I look forward to the presentations and the discussion and, on behalf of the Department of State and the participating committees of the National Academy of Sciences, I wish you a productive and interesting day.

Part 1
Demographic Research

Current Prospects for Demographic Research in the People's Republic of China

John S. Aird

China's current statistical renaissance opens up possibilities for population research that are without precedent since the founding of the People's Republic of China (PRC). No one who has attempted to follow the demographic trends in China of the past 30 years can fail to be excited by the restoration of scholarly communication between Chinese and Western social scientists in general, and demographers in particular, that has occurred since 1977. This excitement is certainly shared by most of our Chinese counterparts. Promising beginnings have been made in the publication of official data that were formerly suppressed, in scholarly exchanges between Chinese and foreign statisticians, demographers, family planning specialists, and other social scientists, and in shared research projects and experiences.

The scope of all these activities remains limited, however, and there are some potential dangers on the path ahead. It is necessary to proceed with caution and to allow time for the gradual accretion of mutual understanding and trust. It would be unfortunate if the prospects for future joint research were lost through impatience or indiscretion on either side. The purpose of this paper is to point up some of the continuing obstacles to research on the population of China and some of the problems in scholarly contacts that are already apparent or may be anticipated.

THE DEMOGRAPHIC DATA AVAILABLE

Despite the increased availability of statistics since the proclamation of Vice-Premier Deng Xiaoping's policy of "learn truth from facts," the demographic data that have been made public are quite limited in scope and the research that can be done on them is far from definitive. The collection of national population data accessible to foreign analysts thus far consists mainly of:

(1) an incomplete series of reported or estimated population totals for midyear and year-end 1949-1956, year-end 1957, midyear 1964, year-end 1969, and year-end 1975-1979;

(2) vital rates for 1950, 1952, 1954-1957, 1962, 1963, 1965, and 1970-1979;

(3) percentage age data for both sexes in 10-year age groups for 1953 and for men, women, and both sexes in 5-year age groups for 1964, absolute age data in 5-year age groups for 1974 or thereabouts, and percentage age data for ages 0-14, 15-29, 30-64, and 65 and over for 1978;

(4) urban and rural population totals for midyear and year-end 1949-1956, and urban and rural vital rates for 1954, 1957, 1962-1964, 1966, 1971, 1973-1974, and 1977;

(5) age-specific mortality rates in 5-year age groups for 1972-1974 for all causes of death and for cancer;

(6) population totals for large minority groups for 1953, 1956, and 1978; and

(7) a few total fertility rates and figures on expectation of life at birth by sex for recent years.

Besides the published data, percentage figures by age and sex in 5-year age groups based on the 1953 census can be read in rough approximation from a population pyramid in a 1959 journal article and total numbers of births from 1949 through 1977 can be read from a graph in a 1980 English-language magazine article. There are also a number of other figures of various kinds for various years and periods on total births, deaths, and natural increase in China.

For subnational units many more data are available, but for any single unit they are generally less complete than those available for the entire country. Sets of provincial population totals have been released for midyear 1953, year-end 1954 and 1957, midyear 1964, and year-end 1978, but the several sets are not entirely comparable because of boundary changes. There is also a set of provincial natural increase rates for 1978 and scattered figures for individual provinces for other years. However, only one province, Guangdong, has provided an extended series of population totals and vital rates spanning the 1970s and part of the 1960s. There are virtually no provincial age data. Selected counties, communes, municipalities, and smaller units have released vital rates for periods of varying length, occasionally in combination with population totals. For several municipalities there are data on expectation of life, infant, neonatal, and maternal mortality rates, and sex ratios at birth. But for no unit of any size is it possible to assemble a reasonably complete demographic profile as of any point in time, let alone for a span of years.

SOURCES OF DATA

The principal sources of demographic data for China are the censuses of 1953 and 1964, the continuous population registers established in urban areas in the early 1950s and in rural areas between 1954 and 1956, the family planning records of the late 1970s, and a number of special censuses and surveys, both national and local, conducted mainly in the 1950s and the 1970s. Of the latter, the most significant for demographic purposes is the cancer epidemiology survey conducted by the Cancer Research Institute in Beijing over a period of several years beginning in 1975. This survey covered about 93 percent of the population of China and included a sample survey of age composition, presumably by sex, and a survey of deaths by age and by cause of death over a 3-year period. A number of special censuses and surveys have been conducted by the State Statistical Bureau on subjects related to demography--censuses of workers and employees in 1955 and 1977, censuses of scientists and technicians in 1960 and 1978, surveys of minority populations in 1956 and 1978, a survey of persons entitled to preferential treatment in 1978, and a survey of persons working in the field of languages in 1980. Most of these studies were planned jointly with other government organs and carried out by local government units on instructions from Beijing.

Within the past few years, some studies have been undertaken at the provincial level and below, mostly in connection with family planning work; in at least one of these original data were collected. The latter involved the collection of age and sex data in six communes in different parts of Guangdong Province. The purpose was to obtain a current age-sex structure for the province as a whole to use in making population projections for family planning purposes, because, for some reason, the age data from the regular population registers were not usable. There are undoubtedly other examples that have not yet come to the attention of foreign analysts. With the establishment of 17 regional and local centers for demographic training and research throughout the country, under a decision announced by the Ministry of Education in April 1980, a marked increase in demographic research is to be expected, and the numbers of field surveys in which new data are obtained will probably also increase.

LIMITATIONS ON THE RELEASE OF OFFICIAL DATA

Only a small fraction of the data generated by the major investigations and reporting systems of China has been released thus far. Some of the data collected in the earlier years may, in fact, have been destroyed during the Cultural Revolution. Several monographs of the State Statistical Bureau, published in such limited numbers that they have never been seen outside China, apparently perished during the cataclysm, and the data they contained may now be lost forever. But there is reason to believe that a considerable amount of national demographic data, including detailed age and sex data from the 1953 and 1964 censuses, are still extant and have been provided to Chinese demographic research institutions for use in making estimates and projections. Apparently the data are made available with the understanding that they are not to be published or released.

The concealment of official data that are normally released in other countries has a long tradition in the PRC. In the 1950s demographic data were regarded as national secrets, and even blank statistical forms issued by the State Statistical Bureau were classified. During the

Hundred Flowers movement of 1957, the State Statistical Bureau, criticized by Chinese scholars for excessive secrecy, promised to be more open; before an open policy could be instituted, however, the Hundred Flowers movement was terminated and the State Statistical Bureau and statistical cadres throughout the country were accused of too much objectivity and professionalism in statistical work and of becoming alienated from the party. They were subjected to "rectification," and as a result the publication of statistical data virtually came to an end and statistical journals and monographs were no longer published. For the next 20 years, statistical data on China's population were not made public, except for the provincial population figures from the 1964 census, which appeared in atlases for the first time in 1971. In 1972, an eminent Canadian statistician visiting China asked economists at a major Chinese university if they had access to data collected by the government and was told that they did not.

The restrictions on the disclosure of official data at the national level, including population data, have not yet been lifted altogether, despite the need to "learn truth from facts." Even nationally prominent statisticians and scholars must obtain permission from the State Council before they can release or publish data that are not already in the public domain. The deputy director of the State Statistical Bureau, Li Chengrui, was asked during his visit to the U.S. Bureau of the Census in 1979 whether his bureau maintained a complete series of national population data going back to 1949 and if so whether they would soon be published. He replied that the State Statistical Bureau did have such data and that he expected they would eventually be published (except perhaps for the figures for several years during the Cultural Revolution, for which the bureau has only estimates) but that the release of the data would take time. Since he made that statement, quite a number of figures from the series that were not previously available have been published in various Chinese sources. In 1979, after a 20-year hiatus, the State Statistical Bureau resumed the publication of its annual statistical communiques on the fulfillment of national economic plans, which now contain some data on national population, and some of the provinces have also begun to issue their own annual statistical summaries. One of these recently released by Sichuan Province gives population totals as well as vital rates for current and selected prior years. In August 1980, an article coauthored by Li that appeared in a Chinese economic journal provided the first current figure on the urban population of China from an authoritative source: an estimated total for 1979.

Writers of journal articles that cite population data still sometimes use index numbers without providing absolute figures, cite averages or cumulative totals for a period of years so that the individual year figures cannot be identified, or otherwise deliberately obscure the particulars of the demographic situation they are analyzing. There is some reason to suspect that the disclosure of the age-sex data from the 1964 census earlier this year was due to an unintentional slip. Chinese colleagues at the China Population Analysis Conference on the population of China, which was held at the East-West Population Institute in May

1980, seemed surprised that these data were in the possession of Western demographers and inquired earnestly how we had gotten them.

Probably one of the major factors holding up the release of official demographic data for China is that the data contain anomalies and internal inconsistencies that could cause embarrassment to the Chinese government and its statisticians. Li Chengrui said that one reason for the delay in releasing the official population series was that the data were still being adjusted. Another reason may be the concern of political leaders that full disclosure of national statistics could make the implementation of central policies and plans more difficult. It may not be convenient, from their point of view, to alert the public to conditions or trends that do not conform to official views on the development of Chinese society or to reveal the extent of noncompliance with unpopular programs and regulations or the failure of administrative expedients. It may also be unwise, in their judgment, to risk providing rival political factions with information they could use to advantage in the continuing power struggles within the party. The leaders may want to learn all the truth that statistics can tell them, even if it is bad news, but they may also want to be selective in deciding how much of it is to be passed on to the country and the rest of the world and when. Similar inhibitions against publishing official data may be operating at the subnational level, and there may be additional incentives for concealment in units in which the falsification of statistics, so widely condemned in the Chinese press in 1978 and 1979 and still evidently a major problem, is particularly rampant.

THE NEW CENSUS

It is abundantly apparent that the present leadership in China is strongly committed to the idea of using statistical data to guide national policy and has attached a high priority to statistical endeavors in general and to the collection of demographic statistics in particular. It is also obvious that the current attitude toward release of data is far more open than at any time since the founding of the PRC. This is nowhere more in evidence than in the development of plans for China's new census and in the assurances recently given informally by Liu Zheng, of the Population Research Institute of the Chinese People's University, during the conference held in May 1980 at the East-West Population Center that the results of the census would "definitely" (iding) be made public in full.

The planning for the census has been under way since at least early 1979. Three successive planning groups have worked on the plans thus far, and the experiences of the two previous Chinese censuses and of a number of foreign census operations have been taken into account. The United Nations Fund for Population Activities (UNFPA) has been extensively involved, as is well known, in providing computer hardware, software, and technical advisers. A census planning group of seven persons led by Li Chengrui conferred with census officials in the United

States, Canada, the Philippines, and Japan in July 1979. The group also visited the United Nations Statistical Office, which is providing technical advice and consultation for the 1982 census. In the course of their tour they asked many questions about census methods in the host countries and were given vast quantities of published materials on census methodology and statistics and copies of census forms currently in use.

It appears that the Chinese census planners initially expected the new census to follow the basic methodology used in 1953 and 1964, which they apparently felt had yielded satisfactory results. The essential features of the method include setting up a temporary national census office under a committee established under the State Council to direct and coordinate the work; using a standard census hour, relying mainly on bringing heads of households to registration stations but sending enumerators door-to-door in areas where the population is scattered; conducting a field check of households in advance to be sure none is omitted; using large masses of trained enumerators so that the work can proceed in many areas at once (the total number of enumerators is expected to be more than 6 million); conducting rechecks after the count is in to determine the extent of double counting, omissions, and other errors; and tabulating the results and reporting the figures upward, level by level, until they reach Beijing.

However, it is apparent from some of the details of the planning that the procedures for the new census are being reviewed and tested more carefully than they were for the two previous censuses. In the 1953 census, the experimental work was carried out at local option, without a standard method, central coordination, or any possibility of changing the methods for the full-scale count as a result of local experiences. This time a pretest has been conducted by central authorities in a single locality, Wuxi City and County as of June 30, 1980, and the results are to be analyzed before the overall census plans are made final. The methods to be employed in rechecking are to be specified in the original census instructions and have, in fact, been tried out during the pretest, instead of being left to local discretion and therefore unstandardized as they were in 1953. One of the recheck methods reportedly includes a sample re-enumeration conducted by persons other than those who took the original count.

Instead of setting a rigid time frame for the whole operation and letting it collapse, as was done in 1953, or adhering to it regardless of the consequences, as was done in 1964, the work schedule for the new census has been modified several times during the planning stages to allow more time for the installation of computers and for additional planning and pretesting. Originally set for June 30, 1980, the census date was postponed to June 30, 1981, and is now scheduled for July 1982. The flexibility in scheduling necessarily implies the understanding and support of the political leadership and is a further indication of their serious determination to secure a good count.

The most significant difference between the new census and its predecessors is the greatly increased number of items on which data are to be gathered. The 1953 census form contained only five items: name, age, sex, nationality, and relationship to head of household. The 1964 census added class status, occupation, and education, but for some reason the information on occupation and education could not be tabulated. During the second stage of planning for the new census (early December 1979) there were 17 items under consideration. These included all of those in the 1964 schedule except for class status, and age was to be approached in two ways--number of years completed and date of birth--in recognition of the recurrent problem of converting Chinese ages to those of Western reckoning. The planners were greatly concerned about the difficulties of occupational classifications and expressed much interest in seeing how the U.S. Bureau of the Census solves this problem. Obviously they did not want again to collect occupational data in such disorder that they could not be tabulated. In addition, the planners considered items on place of birth, place of family origin (a hotly debated item), marital status, age at marriage (also debated), children ever born (a question for women only), number of births and deaths in the household during the previous year, and questions for urban residents on the amount of housing space, number of rooms, type of structure, and condition of unit. The housing questions have reportedly been dropped during the third stage of planning but may be reinstated in time for the full-scale enumeration. It is also reported that, even without the urban housing items, there are now 18 items under consideration, which would imply that there are at least 3 other items on the list besides those indicated above. Hence, it is possible that the final schedule may differ from the one used in the pretest in Wuxi.

The quantity of data that would be collected if the full-scale enumeration includes most of the items now contemplated is much vaster than that of previous Chinese censuses. The planners recognize this and are counting on the computer network to solve the problems. But the computers to be linked together are not all of the same type, and, with little experience with such arrangements, the Chinese probably have little notion of what can go wrong. Moreover, they plan to input the data by means of keypunching, which they think can be done by 5,000 operators within a year. But this task alone is formidable, with data from some 200 to 250 million households to be transcribed, and there is great danger that the entire operation may bog down.

The problem of training enumerators and supervisors and maintaining control over what is done at local levels is also more complicated now than it was in 1953 and 1964. There is reason to be concerned that such a massive effort may get out of control and that central instructions may be modified or disregarded, as apparently happened in 1953, if not also in 1964. The Chinese central authorities profess to have great confidence in "organization," which they say is an advantage China has over other countries in endeavors of this kind. There is ample evidence, however, that in the 1953 census, and in many other national undertakings requiring mass action in conformity with centrally mandated directives, local evasions and shortcuts were rampant and the deception of the central authorities by those at lower levels was widespread. If the returns in the new census indicate that the local population registers have not been well maintained, will the evidence be reported to higher levels as it stands even though it reveals that the local authorities have not been doing a good job? Or will they see to it that the census data cause them no embarrassment? The Wuxi pretest reportedly found only a very small difference between the census count and the corresponding registration total, which may be taken as confirmation of the authorities' perennial conviction that the registration data are highly accurate, but other evidence indicates that Chinese birth and death data that also come from the population registers suffer from severe underregistration. Will the new census provide a truly independent count of the population, or will the field work be managed in such a way that the census will only find what the registers already show? If the accuracy checks disclose much larger margins of error than in 1953 and 1964, will the authorities recognize that a higher omission rate means better measurement of error rather than greater error, or will they, fearing a loss of face, have to withhold the figures? Or will they announce a net undercount figure below the impossible 0.116 percent for 1953 and 0.0014 percent for 1964? It remains to be seen.

The importance of a successful census for China should not be underestimated. Not only are the new census data needed for planning, administrative, and policy-making purposes as well as the resolution of many unanswered questions about China's population; but it is also essential that the census turn out well as a vindication of the current leadership's position that empirical data are the proper basis for sound development strategies. That idea is not wholly accepted within the Chinese Communist Party, many of whose members regard it as heresy and a threat to their own claim to authority, which rests on ideological purity rather than technical knowledge and expertise. A major misadventure in census-taking could mean that the detailed census results would not be released. It could also mean another eclipse for Chinese statistics, like the long darkness that interrupted the careers of so many professional statisticians in China between 1959 and 1977. The recent increase in contacts between Chinese scholars and officials and their foreign counterparts could receive a setback, which would give us all cause for regret. Hence we have a vested interest in the success of China's next census.

DEMOGRAPHIC RESEARCH POSSIBILITIES

The usefulness for research purposes of the Chinese demographic data currently available is limited not only by their incompleteness but also by the fact that they exhibit a number of internal inconsistencies and anomalies that cannot be resolved with the information available. In some cases the anomalies may be due to the fact that the figures come to us through a variety of channels--very few come directly from the State Statistical Bureau--and some may have gotten garbled in the process. In other cases, the problems may be due to the fact that some of the figures are raw data whereas others are estimated or adjusted figures, or that some are preliminary and others are final figures. There are persistent discrepancies between the official natural increase rates and the growth rates implied by the official population totals; they have been explained by an official of the State Statistical Bureau as due to the fact that the vital rates are estimates based on incomplete reports and the totals are reported data. The bureau is aware of the problem and hopes that the next census will provide the means to resolve it.

However, there is also the possibility, if not the likelihood, that some of the inconsistencies are due to defects in the data and in the methods by which they were obtained. Whatever the causes, it is often impossible to determine with any assurance, given the limited information available, which of two conflicting sets of data is to be preferred. The apparent anomalies are often rather small, but that is no guarantee that the underlying problems are not major. The anomalies can sometimes be adjusted out of the data or more plausible configurations can be imposed on them, but there can be no assurance that the modified data come closer to the corresponding demographic situations in China. If the original data by province and within provinces by county level units were available in full detail, presumably the visible defects could be identified with greater certainty and the adjustments to compensate for them could be made without the risk of simply substituting plausible hypothecations for implausible but real data.

Assessing the defects in the data could probably be carried somewhat farther if we knew more about the methods by which the data were gathered. Quite a bit of information is available on procedures presumably used in the 1953 census and how the household registration system is supposed to operate, but what actually happens may not necessarily be the same thing. The 1964 census remains a shadowy and mysterious affair; only a few details about the effort have been provided and even so there are contradictions. The methods used in 1964 were said to have been quite similar to those used in 1953, but the 1964 field operations, which lasted about two weeks, were evidently organized differently from those in 1953, which required more than 11 months. The methods used in the cancer epidemiology survey of 1975 are so far known only from word-of-mouth accounts that differ in some particulars and leave much unexplained. Where the data produced by these various sources are in conflict, it is impossible to know which is more authoritative without more knowledge about the methods and circumstances of data collection. One cannot simply assume that the most recent is the most reliable.

As professional contacts between Chinese and foreign social scientists continue, it is likely that much more will be learned about past and current demographic data collection activities, and the collection of data available outside China will gradually become more complete. Increased research activities and publication by Chinese demographers will also add to the fund of information about data systems and population. The prospects are certainly more encouraging than at any time in the 31 years of the PRC. Chinese statisticians are now taking part in international conferences at which they present papers and make public statements. More conferences are being convened in China, mainly conferences of Chinese demographers, statisticians, family planning workers, and other related specialists, but occasionally these conferences involve invited foreign specialists as well. Trips to China by foreign demographers, either for tours of inquiry or to present lectures to Chinese professionals, can also elicit valuable information from the Chinese, particularly if the visitors are able to get outside Beijing or to have conversations with their hosts in informal settings. Fluency in Chinese is especially advantageous for such purposes. Pi-chao Chen's trips to China have elicited a number of useful pieces of information, including data series for urban and rural units, technical definitions of terms used in family planning, details about Chinese data collection, and expressions of opinion by Chinese colleagues that would not have been obtained as easily, if at all, through an interpreter.

The most promising opportunities are those afforded to foreign scholars who are permitted to conduct research projects in various places in China, sometimes jointly with Chinese researchers. These situations can provide more direct contact with Chinese data sources and an insight into Chinese methods of data collection and analysis. They may also produce original data that can be used to evaluate the local census and registration data or to deal with questions the official data cannot answer. Occasionally these contacts can result in interesting and unexpected disclosures, for example, Katherine Ch'iu Lyle's discovery that in Tianjin premarital pregnancy has become more frequent with the increase in later marriage and that restrictions on number of children per family have led to the abandonment of female infants in bus stations. Other research projects now under way or soon to begin, such as the Wolf study of family and fertility in five rural communities covered in the Buck study, the Lavely investigation of correlates of rural fertility in a commune in Sichuan, and the Chen and Corsa projects on birth planning in specific counties, will undoubtedly yield more information of general value to demographers. Eventually someone will succeed in getting access to detailed local data from one or more Chinese censuses or to the data in the local population registers or may find out how local census and registration work was actually carried out. Such discoveries could be invaluable. Of course, caution must be used in generalizing from fragmentary information garnered in localities that cannot be taken as representative of a country of a billion people; in the present state of our knowledge about China's population, however, such information can yield useful hypotheses and discourage the monolithic generalizations about China that come from too much reliance on summary data and national news dispatches. There is much to be gained on both sides from the continuation and expansion of these contacts.

VULNERABILITIES AND VALUE CONFLICTS

Whether the contacts are as useful to both sides as they might be and, indeed, whether they continue may depend to some degree on how circumspectly they are handled by the participants. On both sides there are some aspects of the relationship that are potentially sensitive. For the Chinese there are vulnerabilities that are both professional and political. For foreign social scientists, especially for Americans, there are possible value conflicts that may pose no immediate danger but could do considerable damage in the long run.

While the Chinese seem for the most part to welcome the resumption of relations with colleagues in other countries, they also seem at times to find them threatening and enter into them with apparent tension and anxiety. The basis for their concern is obviously the fact that they are not well prepared to take part in international professional affairs on an equal footing with their foreign counterparts. The social sciences were in a rather rudimentary state in China when the PRC was founded, and they have made little progress since. Foreign-trained Chinese scholars have been unable to work in their fields or to keep up with what was happening in the rest of the world and have had little opportunity to pass on their knowledge to junior colleagues and students. Hence, of the people who hold positions of prominence in the social sciences in China today, the few senior scholars find that developments in their specialties have left them far behind, and the junior scholars find that they are inadequately trained by world standards. The demographers among them primarily have mathematical, statistical, or economics backgrounds, and have just recently been directed into demography. They know how to calculate and to build mathematical models but not how to conduct field research or to analyze data.

There are indications that the Chinese are acutely aware of their inadequacies when they meet their foreign counterparts. To be asked to prepare a journal article for foreign publication or to deliver a paper at an international conference is for them to be put to a test of uncertain outcome. They sometimes seem hesitant even to speak up in discussions at professional meetings, presumably for fear of revealing their limited grasp of the subject. Even in casual conversations with foreign friends they may risk loss of face.

Of course, we and they can understand and acknowledge that their limitations are no fault of their own, and we can commend their earnest and often impressive efforts to make up for lost time. But mutual recognition does not make things any easier for them in situations that may implicitly make them feel inferior. It is therefore extremely important that foreign colleagues be conscious of these sensibilities and take care to avoid overwhelming Chinese scholars with technical sophistication, subjecting them to the kind of freewheeling criticism that is normal among professionals elsewhere in the world, tendering them excessive or patronizing solicitude, or otherwise causing them needless embarrassment.

We should also be aware of the fact that they are working in an area that has policy implications that can also be rather sensitive. The role of the social scientist in China is to assist in the formulation, implementation, and popularization of national policies relating to the subjects studied. Demographic, family planning, and related biomedical research in China at present must serve the goal of control of population growth and movement. There is only limited scope for the exploration of any possible adverse consequences from official policies and much less for research that might challenge those policies. Scholars are not at liberty to publish whatever data and research findings they please nor may they indulge freely in exchanges of opinion with other participants at international gatherings. They must justify and defend official policies and at all times be careful of what they say.

Given the uncertainty of China's political future and the changes that have occurred in the past, Chinese scholars cannot be certain that the present official view of the importance of demography, the value of social science, or the need to learn from the experiences of other countries will continue indefinitely. All Chinese scholars must know what some of them remember from personal experience about the punishments meted out in the past to those who had professional contacts with foreigners, read foreign books, or espoused foreign ideas. Despite their hopes and ours, they cannot be sure that it will not happen again. If we press them for data and information they are visibly reluctant to provide, we may be asking them to take an unknown chance that could affect their own future and that of their families and associates. In view of what many of them have endured in the past 20 years, it would be reckless and irresponsible for us to put them in this position.

Contacts with the Chinese also pose some delicate problems on our side, mainly in the sphere of value conflicts. Some of the conflicts that arise are not new. In past years the few outsiders invited into China have had to decide for themselves how honest they should be on their return in reporting things they saw and heard that would not please their Chinese hosts. For some visitors the problem simply did not arise because they saw and heard no evil and thus could speak only good of China. Some others felt obliged as a matter of mission to be friendly witnesses, suppressing observations that might be construed as critical. Others simply avoided anything that could prejudice their chances of another visit. This problem is not as acute as it once was because since 1977 the Chinese themselves have been much more candid about their difficulties and shortcomings than ever before, but there is still a certain reluctance on the part of some foreign visitors to give up apologetics for analysis.

How far should foreign scholars or researchers in China go in making observations their hosts need to hear but may not welcome? At what point does reticence exceed what is required by Chinese sensibilities and become merely self-serving? This is often not easy to decide. What do the returning scholars or researchers write in their trip reports? How do they weigh concern for Chinese feelings against personal and professional ethics requiring full and frank disclosure? How far should they go in criticizing Chinese data, research operations, professional literature, analytical methods, theories and interpretations, policies, or administrative practices in writings on China? What should be done about data and information supplied by Chinese informants with the stipulation that they not be published until they appear in a Chinese publication? Probably no simple position can be adopted in response to any of these questions, but they need to be given careful consideration, not only by individuals but also by professional bodies and other organizations seeking contacts with their Chinese opposites.

Even more delicate and more critical are the issues raised by the fact that foreign assistance to China in the fields of demography, family planning, biomedical research, and many others ultimately serves the policies and goals of the political leadership; assistance is therefore in some degree linked to the means by which its objectives are pursued. While the Chinese Communist Party and the Chinese government are committed to the welfare of the Chinese people and maintain that their policies reflect the will of the people, it is the political leaders who decide what that will is; they do not try to ascertain it through public opinion polls. Hence, foreign scholars and researchers who cooperate in projects in China that support official policies may on occasion actually be taking sides with the government against the people.

That possibility is especially imminent in connection with programs relating to family planning and control of population growth. Should foreign family planning specialists be involved in projects to assist the authorities in a drive like that conducted by the family planning authorities in Guangdong Province in 1979, when they called for some 300,000 second- and third-trimester abortions in an effort to reach a centrally assigned target natural increase rate of 10 per 1,000? The drive failed, but if it had been more successful, some women might have paid for its success with their lives. Should demographers help design surveys to locate women who will be induced against their will to submit to sterilization by personnel whose level of skill is insufficient to ensure reasonably safe surgical procedures? Should foreign biomedical researchers enter into joint experiments in which the Chinese subjects are in no position to give informed consent and the safeguards are well below the standards required in their own countries? Such questions can too easily be overlooked by foreign professionals in population-related fields when the objective being served is the control of population growth, to which many of them have a strong ideological commitment. Like other opinion groups with deep convictions, we may not always look critically at the means by which our ends are served.

The danger of ignoring questions of value conflict may turn out within a few years to be more real than it seems at present if either of two eventualities should materialize. One is the resurgence of conservative values in the United States that may challenge our involvement in China's population control efforts on grounds of professional ethics and human rights. The other is a change in the political leadership in China, in which the adverse popular reaction to aspects of the planned birth program became one of the means by which a different faction gained the ascendancy. If either of these changes came to pass, it would be better for the foreign specialists engaged in population-related activities in China to be able to show that they had not failed to consider the value implications of what they had been doing. In a changed political environment it is not likely to go unnoticed that we are all subject to some conflict of interest in these matters, since, quite apart from the advancement of scientific knowledge, our own professional careers are enhanced by increased professional contacts with China. While we are being sensitive to Chinese vulnerabilities, we probably ought not to be unmindful of our own.

Demographic Research Needs and Possibilities in the People's Republic of China

Ansley J. Coale

I am in no way a China expert. The only bases I have for talking about the research needs and possibilities in China are some general knowledge of demography and my particular experience on a recent mission to China. That mission was funded by the United Nations Fund for Population Activities (UNFPA), which is providing technical assistance to China to the extent of some $50 million over the next several years. About 80 percent of these funds are for assistance in the 1982 census of population. Several million dollars are allocated for assistance in establishing demographic research and training in the People's Republic of China (PRC).

The major part of my mission was to give 15 3-hour lectures in a period of 3 weeks to some 60 Chinese academics, assembled from the dozen universities that are, this year (1980), to establish research and training in demography. Without great hope of immediate success, I tried in 45 hours of consecutively translated lectures to summarize what I felt should be the core of the training programs and the research work in these 12 universities.

What I have to say about the research needs and possibilities is somewhat discouraging. It may be that the final quality of demographic research in China will be excellent and will fulfill Chinese needs very well; but the Chinese are starting from a very difficult position. No country could profit more from effective demographic research.

The population of China is nearly one billion, as you all know; fertility and mortality levels have undergone very drastic reductions; there is an ambitious program for retarding the growth of population in the next decade--yet the economy is still in the early stages of development, in terms of average income and occupational structure, for example. Residence is still predominantly rural, and employment is still very heavily dependent on agriculture. The demographic context is an interesting and challenging one, in some ways the most challenging in the world--certainly in terms of population size. Yet there is no rich background of Chinese demography to draw on. A very small number of Chinese demographers had established their expertise prior to the Cultural Revolution, and during the last decade all demographic study ceased, as did indeed research and training in all fields in the universities. Chinese demography is starting from far back in terms of its professional traditions, drawing on a very small reservoir of people trained in any of the social sciences or other relevant fields.

The lack of demographic background was evident as I lectured. Two age groups were represented. The younger persons were in their 30s, and the older ones were in their 50s and 60s. One might expect to find in attendance newly trained students in their early 20s and older faculty members in their late 30s and 40s (as would be found where there had been continuity in university activities); instead, everyone was 10 years older. Few are equipped by age and training to absorb new material and to incorporate it in their intellectual procedures and habits--and that is a major barrier to getting things going.

Perhaps a still more intractable problem for the future of demographic research in China is the absence of data, and the absence of a tradition of collecting data and making them accessible to researchers. The PRC did take a census of sorts in 1953, and another one in 1964. In 1975 there was a large sample survey for epidemiological purposes; each gives some kind of age distribution for the Chinese population. In addition, there is apparently some kind of continuous register of the population as well as registration of births and deaths. Registered events are not tabulated on a national or a provincial level as a routine matter, certainly not in the kind of detail that demographers would like to have. Births are not tabulated by age of mother, duration of marriage, birth order, and so on, and corresponding detail for deaths is also not recorded. The registered data that we see are a compilation of figures that have been collected at the local level. I was told by Chinese colleagues that detail (age of mother, etc.) is recorded in the commune, but not consolidated in tabulations for larger entities. In other words, the figures are recorded but not combined. Nobody knows age-specific fertility rates based on registered births and counts or estimates of the population. The absence of a substantial body of data that we are accustomed to having in other countries is made worse by the absence of a tradition of data gathering and the lack of trained experts in this area. There are no traditions of sample survey work, interview design, and so on, that one likes to see as a resource for repairing this deficit in data.

Demographic research (academic research and government research) and demographic training are apt to be of little significance for China as long as research and training are not empirical. There is a tendency in China to propose a curriculum in demography that traces the history of thought on population from Confucius to the present. That would be an interesting subject for a minority to pursue, but surely should not be the principal form of research. There is a long way to go to provide a critical mass, so to speak, of expert demographers and to have the data for them to work with.

On the positive side, I found--as I am sure other observers more experienced than I have found--very obvious determination and ambition on the part of the Chinese who are planning to work in this field. There was a very evident willingness, even eagerness, to learn. The lectures I gave were uncompromising. They were straight technical demography, with summation signs, even integral signs, and little omission of hard material. There was the additional barrier of consecutive translation, of lectures given day after day instead of at weekly intervals, as in the Princeton graduate courses. I don't think it would have been possible for anyone to have mastered that series of lectures in such a short time. I said so at the time, adding that nevertheless I felt that an introduction to professional-level demography must cover a fair proportion of the basic part of the subject matter. In spite of the formidable material, the attention of the persons attending the lectures never flagged. An experienced lecturer can tell when the audience is paying attention and when it is not. They were paying very close attention all the way through. Some came to the hotel room of the translator in the evenings to ask questions. The lectures were taped, and will be reviewed again. Various officials in different educational institutions and the Ministry of Education expressed willingness to select the best qualified persons, in background and in foreign-language mastery, to be sent abroad, and to bring a continuing flow of experts to help in particular aspects of demography at the recently established demographic research and training centers.

I'll say a few words about the kinds of research in Chinese demography that seem most important. A crucial form of research preliminary to other forms is research on verification of the quality of the data. I was assured, for example, that registration of vital statistics is complete in the cities, but some of the very few published figures arouse my skepticism. In particular, the very low infant mortality rate that is published is hard to accept. Using the age distributions from the 1953 and the 1964 censuses as well as the 1975 epidemiological survey, and using the mortality analysis of Judith Banister and Samuel Preston, we have tried projecting both backward and forward to determine the consistency of the enumerations, and also to look at the number of births that they imply. The number of births implied for the 1960s is some 20-30 percent greater than the number obtained by reading a graph showing the official data. There is ample reason to suspect that, in fact, the registration that is accepted as complete is not. It was quite common for statistical authorities in the United States, before verification was possible, to believe that the figures were complete when they were not. No matter how intense the statistical activity, it can be subject to unsuspected omissions or errors.

I may be wrong about Chinese data. The way to find out is to establish routines for effective monitoring: to use matching procedures and demographic analysis, for example. I think that is an important first step in the establishment of effective demographic research in China.

In a word, the research most needed is that which can provide information useful to short- and long-range policies. This criterion applies to the economic and social sciences generally, and to demography in particular. An example is population projections based on high-quality data concerning the current state of the population. For example, in judging the feasibility of reducing fertility, it is important to know what current parity is--what the distribution of women is by the number of children they have had.

There are two kinds of policies that should be kept in mind in talking about policy-relevant research. One kind is aimed at modifying the future development of population--policies to speed the reduction of mortality, the reportedly quite effective policies aimed at lowering the fertility of the Chinese population, and policies aimed at relocation, restricting rural-urban movement, and so on. In other words, one kind of policy that is contemplated and already implemented is aimed at modifying population trends. Research is needed to determine the feasibility and the implications of those policies--for example, what they imply for the future age distribution.

The other kind of population policy for which research is relevant concerns adaptation to population trends that are inevitable, such as the large increase in the labor force between now and the end of the century, an increase consisting of persons already born. The relevant research needed is how to design social and economic policies to accommodate the population trends that are built into the existing situation. There is an enormous volume of research of that sort in China, with its extreme demographic characteristics. I can only hope that the ambition of the Chinese in their current attempts to upgrade demography will meet with some success.

Estimates of Completeness of Death Recording in the Chinese Sample Survey of 1972-1975

Judith Banister **and** ***Samuel Preston***

During 1975, health workers in selected areas in China were instructed to tabulate from available records the number of deaths, by age and cause, that were recorded among members of various production teams during 1972-1974. They were also asked to record population numbers for those teams by age for year-end 1974. These tabulations were obtained from approximately 25 provinces, including about 93 percent of the population of China. The excluded provinces are remote and relatively poor. It appears that the sample was designed to be approximately a 10-percent sample of the 842 million residents in the provinces covered. According to available accounts, every production brigade in each study area was represented by its fifth or sixth production team (production brigades consist of only a few thousand people at most, and they are divided into production teams of roughly 100-200 people each). Teams are numbered in order of their date of formation, and the fifth and sixth teams, which tend to be located in the middle ranges in terms of length of existence, may not be strictly representative.

This paper is an attempt to evaluate the completeness with which deaths were recorded in this sample. The analysis is reported in two parts. The first part uses stable population techniques, and the second part uses intercensal procedures. In the first part the study population can be analyzed without any assumption about its national representativeness, whereas in the second it is necessary to assume such representativeness.

STABLE METHODS

Two methods have been proposed to estimate death registration completeness in stable populations, i.e., populations characterized by constant growth, birth, and death rates and by a constant age distribution. These methods assume, in addition to population stability, that the completeness of registration is invariant with age above an arbitrary initial starting age. These conditions are never strictly met, and departures from them affect the results yielded by the methods in ways that have been described elsewhere (Preston et al., 1980).

The first method was devised by William Brass and has been described many times (e.g., Brass, 1975). It requires fitting a straight line to scatterplots of the relation between the recorded death rates above particular ages and the estimated "birth rates" above those same ages (the rate of entry into the population aged x and above as a result of persons reaching their xth birthday). Figure 1 shows the scatterplot that forms the basis for this fitting. Evidently, it is rather irregular below age 30 (points to the right represent higher ages), but above that age a linear relation emerges. Many different lines can be fitted to these points, depending on the choice of initial and terminal ages and on the fitting procedure used. Table 1 presents the implied levels of registration completeness that result from different choices. They are all in the range of .68 to .78. (The raw data obtained from the 1975 survey are shown in Appendix Table A-1.)

The second method uses information on the age structure of deaths and an estimate of the growth rate (Preston and Hill, 1980; Preston et al., 1980). The completeness of death registration above any age x is estimated as the ratio of the calculated population over age x (calculated from the distribution of deaths over age x and the population growth rate) to the population over age x as enumerated. It is therefore possible to estimate the completeness of death registration for the age ranges 10+, 15+, 20+ and so on. If the growth rate is uncertain, users are encouraged to experiment with several rates and to choose the one that yields the most level age-sequence of completeness estimates that is closest to horizontal for successive values of x, the ages above which completeness is estimated. This procedure is recommended because completeness estimates that start with a younger initial age are more sensitive to errors in the estimated growth rate than are those that begin with an older initial age. Table 1 presents completeness estimates based on three different growth rates and various initial ages of estimation. The resulting series are plotted in Figure 2. Clearly, none of the three growth rates yields a level sequence. A growth rate of .025 yields an age-sequence of completeness estimate that is nearly constant at .83-.84 for values of x up to age 30; above that age, completeness estimates decline. On the other hand, estimates with an r = .015 are virtually constant at .65 for values of x from age 30 onwards but fall as x falls for values of x below age 30. The intermediate growth rate of .020 yields estimates that increase slowly with x to age 30 and decline slowly with x thereafter. Overall, this final sequence is the most level and averages about .70.

At this point it is necessary to discuss the effects of errors in assumptions or data on the stable estimates. Of the many possible errors, we believe that the most important in the present application is population instability resulting from mortality decline. Even if we assume that the completeness of death recording is as low as .70, the resulting life expectancy in 1972-1974 is 60.0 years. In comparison, Barclay et al. (1976) estimate life expectancy among Chinese farmers in 1929-1931 to have been below 25 years. These figures imply that China experienced an extremely rapid mortality decline even if deaths recorded

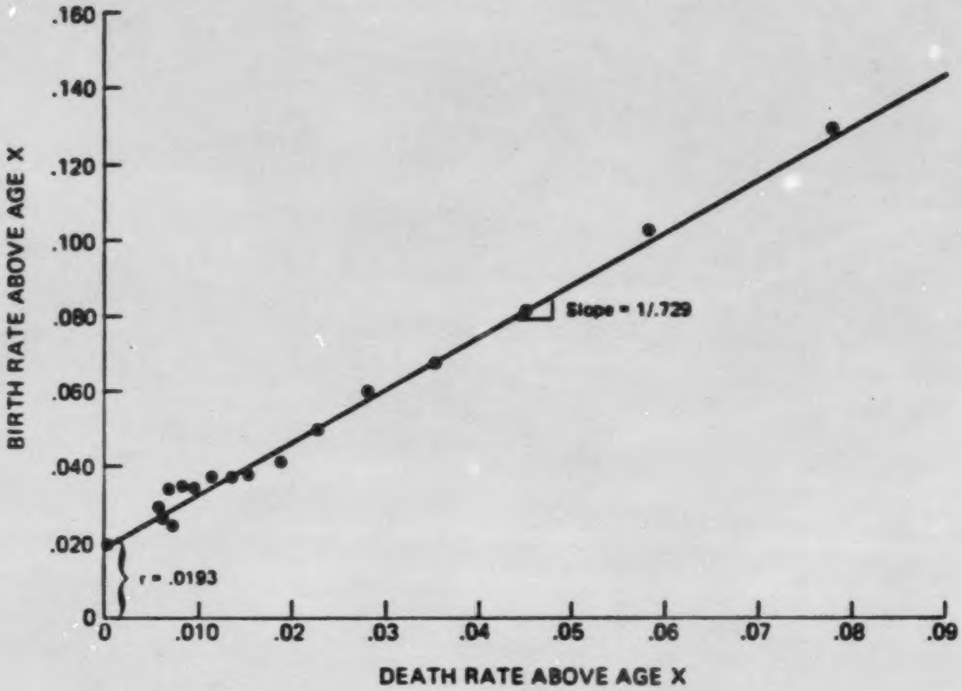

FIGURE 1 Scatterplot for Brass Estimate of Registration Completeress (Line Presented is Fitted to Ages 20-60)

TABLE 1 Results of Brass Method of Estimating Death Registration Completeness as Applied to Data for China, 1975

Range of Ages Used in Fitting	Completeness Estimate (corresponding implied growth rate shown in parentheses)	
	Bi-Weight Regression	Least-Squares Regression
0-80	.679 (.0183)	.678 (.0183)
5-80	.690 (.0191)	.683 (.0189)
5-60	.774 (.0220)	.779 (.0221)
15-65	.721 (.0198)	.724 (.0200)
20-60	.729 (.0193)	.742 (.0201)

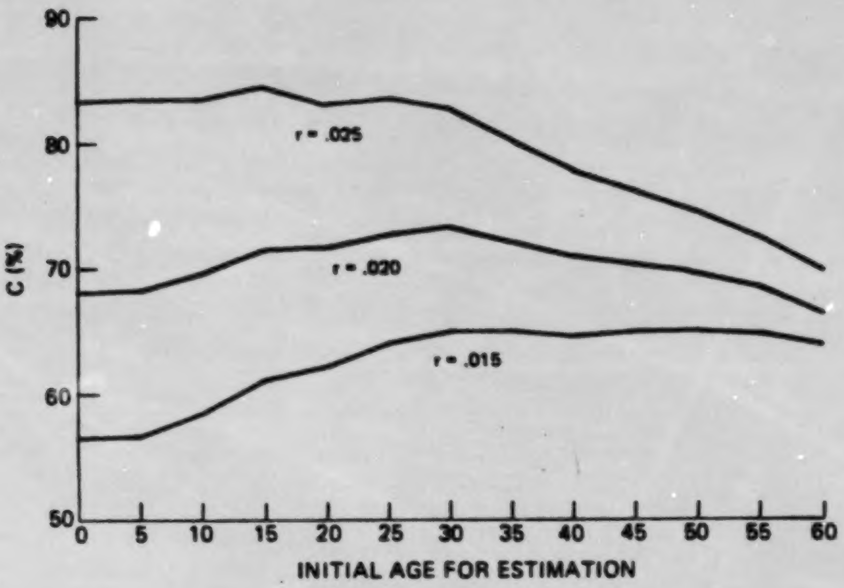

FIGURE 2 Estimated Completeness of Death Registration (C), Chinese Sample, 1972-1974, Using Preston-Coale Method

for the 1972-1974 period are considered to be seriously incomplete. Such a decline clearly violates an assumption on which the stable methods are based.

Simulations have been performed to estimate the effect of mortality decline on stable estimates of registration completeness. One simulation assumes that, in the space of 25 years, life expectancy at birth improves from 37.5 to 50.0 years in a fashion described by Coale-Demeny (1966) "West" female model life tables. This decline occurs to an initially stable population. Estimates of completeness made at the end of the 25-year period (when deaths are in fact completely registered) decline from 1.01 at ages 10 or 20 to 0.95 at ages 50 or 60 (Preston et al., 1980:187-189). Estimates at younger ages are more accurate, and a declining age-sequence of estimates is produced. The simulated mortality decline, however, is only about half as rapid as that which probably occurred in China, and of shorter duration. Larger distortions should be expected in the Chinese application. The simulated age-sequence of estimates is not dissimilar to that produced by $r = .025$ in Figure 2; the larger declines for values of x above age 30 in the figure (roughly three times as rapid) might be attributed to the more rapid mortality decline in China. If the estimates at younger ages are relatively unaffected by the mortality decline, then the choice of $r = .025$ implies a completeness level of about .84.

Similar simulations have also been performed with respect to the Brass procedure (Martin, 1980). It appears, in general, to be somewhat more vulnerable to error resulting from mortality decline. Estimates of completeness are biased downwards by mortality improvements. The example given by Martin that comes closest to the apparent Chinese situation starts with female "West" life expectancy of 30 and reaches one of 67.2 in the space of 30 years (with the gross reproduction rate constant at 2.5). Estimation of completeness via Brass's method after either 20 or 30 years yields a completeness level of .81 when registration is in fact 100 percent complete. Thus, the Brass results reported in Table 2 probably rather seriously underestimate the completeness of death recording.

INTERCENSAL METHODS

A variety of intercensal methods have been proposed for estimating registration completeness. These can be applied to the sample survey of 1975 in combination with the census age distribution of 1964. However, there are very serious questions about the comparability of the two sources. The difficulties are best represented by displaying the age sequence of intercensal growth rates between the 1953 and 1964 censuses alongside those between the 1964 census and the 1975 survey. These rates are presented in cols. 1-3 of Table 3. The 1974 total population was assumed to be 910 million to account for the approximately 7 percent of the population that was outside the surveyed area. Whereas the age-sequence of growth rates for the entire 1953-1974 period appears to

TABLE 2 Estimated Completeness of Death Registration Using Preston-Coale Method

Age Range Used to Estimate Completeness	Assumed Growth Rate		
	.015	.020	.025
0+	.566	.684	.835
5+	.566	.684	.835
10+	.586	.697	.837
15+	.611	.717	.846
20+	.621	.717	.833
25+	.642	.730	.836
30+	.654	.734	.828
35+	.651	.721	.801
40+	.649	.710	.779
45+	.651	.703	.761
50+	.652	.697	.745
55+	.650	.686	.725
60+	.640	.669	.700

Note: These results are developed using a program written by John Hobcraft.

TABLE 3 "Intercensal" Growth Rates in China, 1953-1964 and 1964-1974

				Assuming 1953 and 1974 are "Chinese" and 1964 is "Western" and Correcting 1964 for Comparability		Same Assumptions as Cols. (4) and (5), but Adjusting 1964 Age Distribution for 4 Percent Undercount at All Ages	
Age (a)	Growth Rate for Ages a and Above, 1953-1964[a] (1)	Growth Rate for Ages a and Above, 1964-1974[b] (2)	Growth Rate for Ages a and Above, 1953-1974 (3)	Approximate Growth Rate Ages a+, 1953-1964 (4)	Approximate Growth Rate Ages a+, 1964-1974 (5)	Approximate Growth Rate Ages a+, 1953-1964 (6)	Approximate Growth Rate Ages a+, 1964-1974 (7)
0	.0147	.0269	.0207	.0147	.0269	.0183	.0232
5	.0160	.0292	.0225	.0190	.0261	.0226	.0224
10	.0128	.0298	.0211	.0161	.0263	.0197	.0226
15	.0078	.0307	.0190	.0111	.0272	.0147	.0235
20	.0067	.0308	.0185	.0098	.0277	.0134	.0240
25	.0072	.0276	.0172	.0103	.0244	.0139	.0207
30	.0066	.0273	.0167	.0102	.0235	.0138	.0198
35	.0052	.0300	.0173	.0092	.0258	.0128	.0221
40	.0043	.0325	.0181	.0087	.0279	.0123	.0242
45	.0034	.0344	.0185	.0083	.0292	.0119	.0255
50	.0029	.0362	.0192	.0086	.0302	.0122	.0265
55	.0022	.0392	.0203	.0094	.0320	.0130	.0283
60	.0002	.0448	.0221	.0088	.0357	.0124	.0320
65	-.0020	.0520	.0243	.0088	.0407	.0124	.0370
70	-.0034	.0590	.0270	.0090	.0450	.0126	.0413
75	.0053	.0674	.0356	.0230	.0484	.0266	.0447
80	.0022	.0841	.0422				

[a] 1953 total population of 582,603,417 used. Distributed by age according to Tien Feng-tiao age distribution as recorded in Y.C. Yu's "The Demographic Situation in China," Population Studies, vol. 32(3), 1978; p. 441. 1964 population of 685,930,000 used, distributed by age according to data supplied by John Chao from a paper by John Aird. Both census figures were placed at midyear.

[b] 1964 population as cited in note a. 1974 population of 910 million used, distributed by age according to Table 1 of Judith Banister, "Strengths and Weaknesses of China's Population Data." Presented at the China Population Analysis Conference, East-West Population Institute, Honolulu, May 19-23, 1980.

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be plausible, displaying the familiar U-shaped pattern indicative of mortality decline, the same cannot be said for the two component periods. Growth rates generally decline with age for 1953-1964 and rise with age during 1964-1974. There is a clear inverse association between the two sets of growth rates. Growth rates for the population above age 65 rise from -.002 in the earlier period to +.0520 in the later period.

There is a clear suggestion that something is wrong with the 1964 age distribution, which seems to comprise progressively too few people as age increases. Furthermore, the virtual doubling of total population growth rates between 1953-1964 and 1964-1974 implies that there may have been unusual difficulties in the completeness of enumeration in 1964. Intercensal analyses that use the unadjusted 1964 age distribution produce very implausible estimates of registration completeness, often or indeed usually exceeding unity.

One factor that might have contributed to the peculiar age-sequences of growth rates in the two periods is the use of a different procedure of age reckoning among adults in the 1964 census. Evidently, a special effort was made in that year to have ages recorded in a conventional Western fashion. There is other information that suggests that a substantial amount of age reporting in the traditional Chinese style occurred in 1974 and 1953. Accordingly, we have experimentally corrected the 1964 age distribution to make it less Western and more Chinese. This was accomplished simply by increasing the population above age x in 1964 by the factor

$$\frac{\left({}_5N_x + {}_5N_{x-5}\right)}{10(N_{x+})}$$

or by the "birth rate" into the population ages x and above. This amounts to displacing upward the age distribution by approximately one year, so that persons of age x-1 and over as recorded in the census are assumed to be of age x and above according to Chinese age reckoning.

The implications of this displacement for intercensal growth rates are shown in columns (4) and (5) of Table 3. The age-sequence of growth rates for 1953-1964 becomes roughly level between ages 20 and above and 70 and above, and higher rates are observed at the extremes of age; a J-shaped pattern, with a much lower slope to the right hand upright of the J than in the uncorrected figures, is estimated for 1964-1974. The correction does not, of course, affect the abrupt increase between the periods in the total population growth rate. The age pattern of corrected growth rates is more acceptable than that of the uncorrected sequence, but there is obviously no assurance that it is accurate.

One way to gauge the acceptability of this adjustment is to compare the intercensal changes by age to those implied by deaths registered in the 1972-1974 survey; at the same time, of course, we must attend to the evaluation of the death records, the main object of this exercise.

One intercensal method for estimating death registration completeness, as well as the relative completeness of coverage of the two censuses, was suggested by Preston and Hill (1980). If registration completeness and census completeness are invariant with age, then the following equation applies:

$$\frac{N^{t}_{(x+t)+}}{N^{o}_{x+}} = \frac{E(t)}{E(o)} - \frac{E(t)}{C} \cdot \frac{D^{c}_{x+}}{N^{o}_{x+}} \text{ , where}$$

$N^{t}_{(x+t)+}$ = recorded number of persons above age (x+t) at time t;

D^{c}_{x+} = recorded deaths to cohorts aged x and above at time o;

E(t),E(o) = completeness of coverage of censuses at time t and time o, respectively; and

C = completeness with which deaths are recorded.

The constant term E(t)/E(o) and the slope E(t)/C may then be estimated by fitting a straight line to the relationship between $N^{t}_{(x+t)+}/N^{o}_{x+}$ and D^{c}_{x+}/N^{o}_{x+}. The points required for making this fit to 1964-1974 intercensal changes are shown in Figure 3.[1] These points (with one exception) lie exceedingly close to a straight line with a slope of -1.136 and an intercept of .98. The indicated completeness of death registration relative to the completeness of population coverage in the 1974 survey, C/E(1974), is 1/1.136 = .880. The implication is that deaths are incomplete by some 12 percent; that is, deaths would have to be inflated by 1.136 in order to account for intercensal changes in cohort size. A further implication is that the population count in the 1974 study population used in the computations is only 2 percent deficient relative to the 1964 census. Since the study population needs to be adjusted upward by approximately 7 percent to account for its failure to include the entire nation, then the 1964 census should be adjusted upward by some 5 percent. Note that the average number of deaths during the period 1972-1974 must be inflated by 1/.88 to account for intercensal change; .88 is an estimate of "completeness" of the average annual number of deaths in 1972-1974 relative to the expected annual number of deaths for the whole period 1964-1974, and may simply reflect the fact that deaths per year were declining. If so, a very

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[1] The "corrected" 1964 age distribution is used. The census was moved from midyear to year end, 1964, by applying the recorded intercensal growth rate pertaining to all ages combined for one half year. "Intercensal" deaths are taken as the average annual deaths for the study population, 1972-1974, times 10. The total population size in 1974 is that of the study population rather than the adjusted total of 910 million.

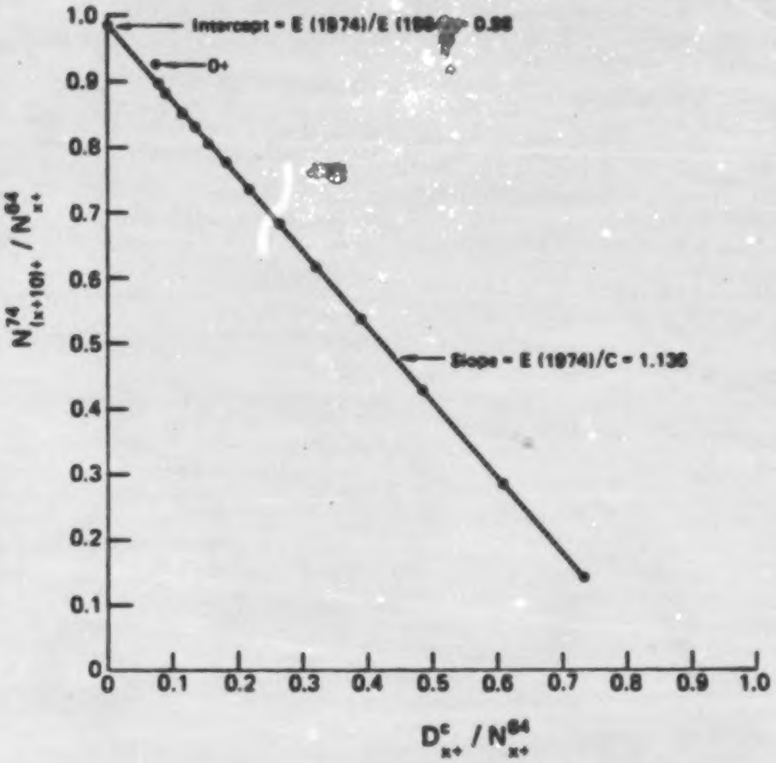

FIGURE 3 Relation Between Proportionate Intercensal Changes in Cohort Size and Proportionate Intercensal Deaths to Cohort, China 1964-1974, 1964 Age Distribution Corrected to be "Chinese"

rapid decline of 3 percent annually is implied, since the series are displaced by 4 years, on average. Since the population is growing at about 2 percent a year, a decline in adult death rates of about 5 percent per year is implied. Such a rate is typically associated with a gain of more than one year of life expectancy at birth for every calendar year.

In order to apply the other intercensal methods, estimates of growth rates are required. The above results suggest that the observed 1964-1974 growth rates may be seriously in error by virtue of relative underenumeration in 1964. We have therefore used these results to inflate the 1964 age distribution at all ages by 4 percent, a somewhat more conservative figure than the 5 percent estimated above. The resulting intercensal growth rates for 1953-1964 and 1964-1974, shown in Table 3, increase much less abruptly than in the unadjusted figures.

Several other procedures can now be applied. One of these uses the following identity for a closed population:

$$r_{a+} = b_{a+} - d_{a+} ,$$

where the terms from left to right refer to the growth rate, birth rate, and death rate of the population above age a. If the recorded death rate, dR_{a+}, has a completeness at each age C, then the equation becomes

$$r_{a+} = b_{a+} - \frac{1}{C} dR_{a+} , \quad \text{or}$$

$$C = \frac{dR_{a+}}{b_{a+} - r_{a+}}$$

No assumption of stability is required to use this procedure. Results are shown in Table 4. If the final corrected growth rates from Table 3 are used, completeness estimates in the range of .72-.96 are obtained at different ages (with one observation outside this range). Estimates are clustered toward the upper end of the range, and stabilize at about .9 at ages 50 and above. Use of the uncorrected growth rates, also shown in the table, produces absurd results.[2]

With direct estimates of growth rates, the stable methods can be reapplied. However, the growth rates are not constant with age, so that strictly stable assumptions are inappropriate. Ansley Coale has suggested a method of estimation originally developed from stable population theory but modified to allow for growth rates that vary with age. He noted that the number of persons aged a can be estimated from the growth rate and age distribution of deaths above a in a stable

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[2] If in the uncorrected figures $(b_{a+} - r_{a+})$ is plotted against dR_{a+}, an intercept of .0035 or so is produced, which are consistent with the earlier claim that the 1964 census was about 4 percent deficient relative to the 1974 survey inflated to 910 million.

TABLE 4 Completeness Estimates Based on Comparisons of 1972-1974 Death Rates to Difference Between Birth Rates and Growth Rates

Age (a)	Mean Birth Rate, a+, 1964 and 1974	Completeness of Death Registration Based on Ratio of Death Rate a+ to Birth Rate a+ Minus:	
		Uncorrected Growth Rate a+	Corrected Growth Rate a+
5	.0313	3.04	.89
10	.0357	1.22	.59
15	.0357	1.68	.72
20	.0339	3.13	.87
25	.0363	1.32	.65
30	.0385	1.03	.76
35	.0413	1.40	.96
40	.0463	1.36	.95
45	.0524	1.27	.92
50	.0604	1.16	.89
55	.0714	1.09	.90
60	.0884	1.03	.90
65	.1110	.99	.88
70	.1381	.98	.88
75	.1871	.85	.79

population, and that the ratio of this estimate to the true population at age a is equal to the completeness of registration above a. These numbers, N(a), estimated by using different growth rates for different ages above a, can be cumulated to provide the total estimated population above a. The ratio of this cumulated total to the true total above a provides another, smoothed, estimate of registration completeness. Table 5 presents the results of using this latter procedure.[3] It gives estimates of registration completeness that are very stable with age and cluster in the range of .83-.86 for ages 25 and above.

SUMMARY

Five procedures have been employed to estimate the completeness of death recording in the Chinese sample survey of 1975.

(1) The Brass stable population procedure gives estimates of completeness in the range of .68 to .78, but simulations of the effects of rapid mortality decline such as apparently has occurred in China suggest that this estimate may require inflation by 1/.81, giving a revised range of .84-.96.

(2) The Preston-Coale procedure with an arbitrary growth rate of .025 produces an age-pattern of estimates similar to that which can normally be expected in a destabilized population, whereas other growth rates produce patterns that require other, and to us less plausible, justification. The completeness estimate implied at the value of $r = .025$ is .83-.84.

Other estimates make use of intercensal procedures. Unfortunately, there is evidence of incomparability both in age reporting and in the general completeness of coverage in the two "censuses." Results of the death registration methods are sensitive to the corrections that are employed. In this paper, the major correction used is to displace the 1964 census age distribution upward by one year to make it more "Chinese." This procedure produces two, essentially independent, estimates of the incompleteness of the 1964 census (relative to an estimate of 910 million for 1974) of about 4 percent. The first procedure that follows does not make use of the census incompleteness estimate; the other two do.

(3) The Preston-Hill intercensal procedure, which compares intercensal changes in cohort size to intercensal cohort deaths, produces a completeness estimate of .88, this estimate being, strictly speaking, the ratio of average annual deaths reported for 1972-1974 to average annual deaths expected for 1964-1974.

(4) Comparisons of the registered death rate to the difference between birth rates and growth rates derived from intercensal comparisons produce a set of completeness estimates in the range (with one exception)

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[3] We are grateful to Shiro Horiuchi for programming the solution required for this method.

TABLE 5 Coale Method Results Assuming Stability Above Each Age but Allowing Growth Rates to Vary, Using r(a+) Series of Table 1 for 1964-1974, Adjusted for Western Age Reporting and 4 Percent Omission in 1964 Census

Age a	Completeness
10	.79
15	.81
20	.81
25	.83
30	.85
35	.85
40	.85
45	.85
50	.85
55	.86
60	.85
65	.86
70	.84
75	.85
80	.86

of .72-.96. Estimates (particularly at the older ages) are clustered about .90.

(5) The Coale method, which is a hybrid of stable and intercensal procedures, produces a very stable set of estimates in the range of .83-.86.

CONCLUSION

We should stress that the intercensal methods are sensitive to the procedures used to "correct" the 1964 age distribution. A different correction procedure would move all intercensal estimates in the same direction, so that their consistency should not be taken as evidence of the joint reliability of the intercensal procedures. The adjustment used here, which is defended on grounds of its correction of the bizarre intercensal growth rate patterns for 1953-1964 and 1964-1974, may ultimately require considerable amendment. Completeness results from using it are generally in the range of .82-.90. This is also the general range suggested by the stable methods after they are corrected for the likely errors introduced by destabilizing mortality change. At this point our best guess would place the completeness of death reporting in the range of .82-.90. It should be noted that some of the implied incompleteness--about 3%--is simply a result of the fact that the year-end population size in 1974 is larger than that which would pertain to the mid-point of the 1972-1974 period for which deaths are recorded. It might also be noted that we are evaluating the efficiency with which deaths were recorded in the sample survey, rather than the quality of the underlying registration system from which the deaths were extricated.

If we adopt the midpoint of the estimated completeness range, i.e., .86, and correct death reports at all ages accordingly (and not simply for adults), then the implied level of life expectancy at birth is about 63-64 years.

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Appendix Table A-1   Mortality Data by Age Obtained from the China 1975 Survey of Cancer Epidemiology

Age	Study Population (in thousands)	Proportion of Study Population	Number of Deaths (in thousands)	Age-Specific Death Rate (per thousand)	Number of Cancer Deaths
0-4	104,413	12.41	1,422	13.62	5.6
5-9	113,808	13.52	251	2.21	4.5
10-14	103,941	12.35	95	0.92	4.1
15-19	78,425	9.32	81	1.03	5.1
20-24	77,000	9.15	112	1.45	6.7
25-29	63,154	7.50	104	1.65	8.2
30-34	50,067	5.95	102	2.04	11.3
35-39	46,595	5.54	133	2.85	20.6
40-44	42,981	5.11	168	3.91	33.5
45-49	38,390	4.56	221	5.76	51.6
50-54	32,896	3.91	291	8.85	70.0
55-59	27,610	3.28	375	13.58	83.8
60-64	23,285	2.77	512	21.99	95.7
65-69	16,936	2.01	559	33.01	86.0
70-74	11,739	1.39	653	56.63	72.4
75-79	6,444	0.77	485	75.26	39.0
80+	3,986	0.47	579	145.26	24.5
	841,670	100.00	6,143	7.30	622.6

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Population Trends, Population Policy, and Population Studies in China

Ansley J. Coale

With recent dramatic changes in the components of population growth in China and the evolution of population policies of unprecedented scope, demography is evidently becoming recognized within the People's Republic as an important academic and scientific discipline. The sparse Chinese existing resources in the social sciences and statistics will make the needed development of demography difficult.

Newly available information about the population of China

As everyone knows, China has the largest national population in the world. As any demographer knows, reports of remarkably low death rates and remarkable reductions in the birth rate in the past decade have come from many observers. Recently it has become possible to piece together from authoritative sources a fairly complete picture of the growth of the Chinese population and the evolution of the Chinese birth rate and death rate since the People's Republic was established.

Because the data have appeared in manuscripts that have not been widely publicized, it may be useful to list here birth rates and death rates derived from material written by Chinese with access to official data. The following sources have been used: (1) An article by Wang Naizong, published in April 1980, included a graph presenting the annual number of births in China from 1949 to 1977.[1] John Aird has carefully read the number of births for each year from this graph.[2] (2) The total numbers of births and deaths for the aggregate time periods 1950–57, 1958–61, 1962–71, and 1972–79 are given in an article that appeared in a Chinese language journal in March 1980.[3] The total numbers of births period by period are in close but not exact agreement with Aird's reading of Wang's graph. (For 1962–71 and 1972–79, the sum of the individual-year births is 98.6 percent of the given total.) (3) In a paper prepared for the Beijing International Round Table on Demography in October 1980, Professor Liu Zheng, the Director of the Institute of Population Research at the People's University, gave figures for national birth and death rates for a number of individual years between 1954 and 1979 and rural and urban birth and death rates for selected years within the same broad period.[4] When weighted averages of rural and urban rates are included for years not listed in the sequence of total rates, Professor Liu's data provide national rates for 18 calendar years.

The birth and death rates presented in Tables 1 and 2, and in Figure 1, quite clearly confirm what has been heard from returning travelers and seen in isolated items in the Chinese press—they show a population of almost a billion in 1979, with a very low death rate, and a birth rate that has been halved in no more than 15 years. Earlier reports of a large reduction in fertility were received skeptically by some foreign experts. A large reduction in *urban*

TABLE 1 Annual birth and death rates in the People's Republic of China, 1953–79

Year	Rough estimate of population (millions)	Number of births (millions)[a]	Calculated birth rate (per 1000)	Birth rates given by Liu (per 1000)	Death rates given by Liu (per 1000)
1953	583[b]	20.0	34.3		
1954	592	22.0	37.2	38.1[d]	13.1[d]
1955	601	20.1	33.4		
1956	610	20.6	33.8		
1957	620	21.1	34.0	34	11
1958	630	18.6	29.5		
1959	640	16.2	25.3		
1960	650	12.6	19.4		
1961	660	11.1	16.8		
1962	670	24.1	36.0	37.3[d]	10.2[d]
1963	681	29.0	42.6	43.6[d]	10.2[d]
1964	691[b]	27.2	39.4	39.4[d]	11.6[d]
1965	712	27.8	39.0	38	9.6
1966	732	25.1	34.3	35.0[d]	9.1[d]
1967	752	25.0	33.2		
1968	773	27.2	35.2		
1969	795	27.0	34.0		
1970	818	27.3	33.4	33.6	7.6
1971	839	24.9	29.7	30.7	7.3
1972	859	24.9	29.0	29.9	7.65
1973	879	24.4	27.8	28.1	7.08
1974	896	23.5	26.2	25.0	7.38
1975	912	21.0	23.0	23.1	7.36
1976	926	18.2	19.7	20.0	7.29
1977	939	16.2	17.3	19.0	6.91
1978	952[c]			18.3	6.2
1979	965			17.9	6.2

[a] Read from graphs by John Aird (see text).

[b] Census figure.

[c] Interpolated between official year-end estimates. For 1954–63, rough estimates are calculated by constant average rate of increase. For 1965–75, interpolation is accomplished with the help of Professor Liu's figures for birth and death rates.

[d] Weighted average of rural and urban rates.

SOURCES: See text.

TABLE 2 Aggregate number of births and deaths and average birth and death rates in selected time intervals 1950–79, People's Republic of China

	Aggregate numbers (millions)			Rates per 1000	
Time period	Births	Deaths	Person-years	Births	Deaths
1950–57	167.1	66.3	4679	35.7	14.2
1958–61	61.3	43.8	2580	23.8	17.0
1962–71	267.6	66.3	7460	35.9	8.9
1972–79	164.7	51.2	7328	22.5	7.0

SOURCE: Births and deaths from Zhu Zhengzhi, "China's population problem," *Jingji Kexu* (March 1980); person-years from Table 1.

fertility has been generally accepted as credible, especially since many young persons were forced to migrate to rural areas during the Cultural Revolution; but the occurrence of a general reduction in fertility in the *rural* population was not so readily accepted. There is, therefore, special interest in the rural and urban birth rates that Liu Zheng provides for selected years (Table 3 and Figure 2). In 1954 and 1957, his data show higher urban than rural birth rates; in 1962 and 1963 the rural and urban rates are little different; but for all years

FIGURE 1 Birth and death rates in the People's Republic of China

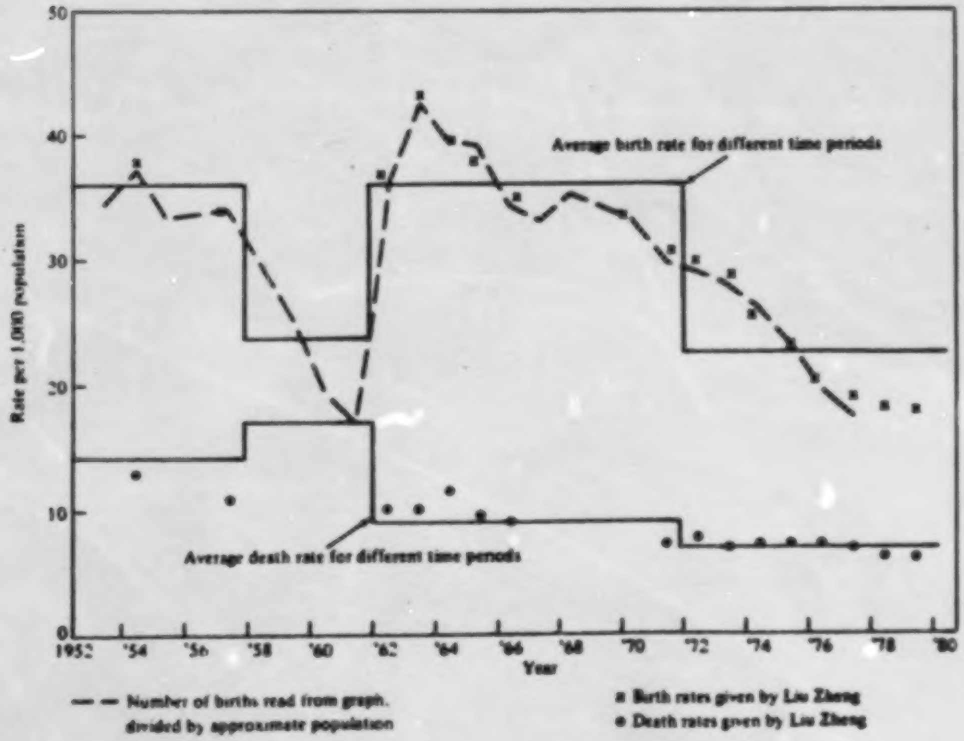
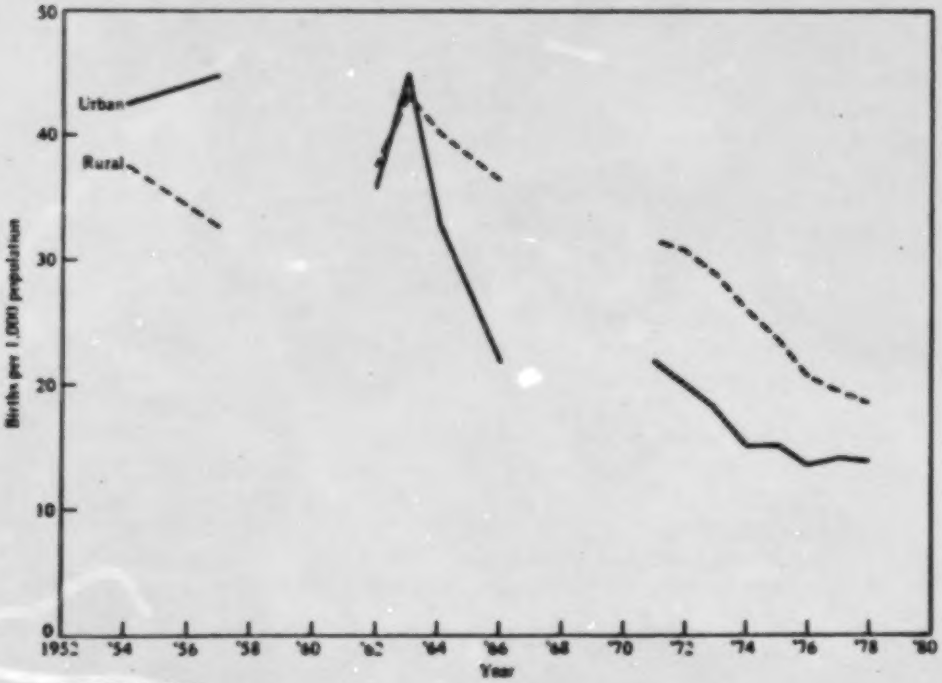


TABLE 3 Birth rates and death rates in rural and urban areas of the People's Republic, selected years, 1954–77

Year	Births per thousand population		Deaths per thousand population	
	Urban	Rural	Urban	Rural
1954	42.5	37.5	8.1	13.7
1957	44.5	32.8	8.5	11.1
1962	35.9	37.4	8.4	10.4
1963	45.0	43.4	7.2	10.6
1964	33.0	40.3	7.4	12.3
1966	21.7	36.7	5.8	9.5
1971	21.9	31.9	5.5	7.6
1972	20.1	31.2	—	—
1973	18.1	29.4	5.2	7.3
1974	15.3 (?)	26.2	5.4	7.6
1975	15.3	24.2	—	—
1976	13.6	20.9	—	—
1977	13.9	19.7	5.8	7.1
1978	14.0	18.8	—	—

FIGURE 2 Urban and rural birth rates, selected years, People's Republic of China



SOURCE Liu Zheng

listed from 1964 to 1977, the urban rates, which fell by 50 percent from 1963 to 1966, are lower than the rural. The 1977 rural rate is nevertheless only half the rate in 1964. Unless the completeness with which rural births are recorded has deteriorated, or unless the rural population covered by Liu's figures is a select sample, the reduction in Chinese fertility has by no means been limited to the urban population.

Another remarkable feature of these data is the deficit in the birth rate and the excess death rate from 1958 to 1961—the period of the Great Leap Forward and the food crisis of the early 1960s. (No single calendar-year death rates have appeared for this period.) The average death rate for 1958–61 (17 per thousand) is 1.6 times the average (10.6 per thousand) of the rates given for the adjacent years (1957 and 1962) by Liu, implying about 16.5 million deaths in excess of the trend during these four years. The sharp dip in the birth rate and the excess mortality in the late 1950s and early 1960s are reminiscent of the demographic impact of forced collectivization in Russia from 1929 to 1936.[5]

Birth control policy in China

The decline in the Chinese birth rate has coincided with two developments in policy: a marked change in the ideology of political statements about population, and the emergence of government programs contributing directly to lower fertility.

In the 1950s, various views about population can be found in the Chinese press and journals; at a time of relatively great freedom of expression in the late 1950s, Professor Ma Yin-Chu wrote of a new theory on population, a theory holding that rapid population growth was a handicap to the success of the Chinese socialist program. He was castigated in 1960 by spokesmen for the Party, who invoked a narrow anti-Malthusian version of Marxist reasoning, and quoted Mao to the effect that a large and growing population was in no way disadvantageous in the context of the Chinese revolutionary regime. Ma was in disgrace until after Mao's death and is among those whose reputation has been rehabilitated since 1975.

In the early 1970s, at an ECAFE seminar preparatory to the Bucharest World Population Conference, the Chinese contributed a statement asserting the importance in China of planning reproduction of the population as well as economic production. In 1979 the dogmatic position of 1960 was explicitly disavowed. In a speech proposing a "Planned Birth Law," Vice Premier Chen Muhua, who is head of the Planned Birth Leadership group in the State Council, strongly endorsed fertility control as a practical aim of policy. She said that China would have been better off if there had been 400 million births rather than the actual 600 million since liberation; she estimated the large fraction of the national income that had been devoted to the rearing of all these children and noted that their care competed with the use of funds for a larger volume of investment and for more intensive education. She also asserted that the alleged contradiction between a Marxist position and the restriction of births was misinformed and that it had been a mistake to neglect population research.

Since early in the 1970s, the government has advocated later marriage and reduced fertility for married couples. Zhou Enlai's statement that "one is the best, two you square the account, three you make a mistake" was a household commonplace in China in the early 1970s, according to C. H. Tuan. In the proposed "Planned Birth Ordinance," discussed but not officially passed at the People's Congress in September 1980, the emphasis is on the one child family, with a combination of comprehensive incentives and penalties to promote the achievement of such a target. It is also proposed to include Planned Birth work in the daily agenda at all levels of party committees; to strengthen propaganda and education; and to train medical personnel, improve medical technology, and produce and supply contraceptive devices.

Targets for population growth

In Vice Premier Chen Muhua's speech in 1979, it was asserted that the annual rate of population growth had decreased from 2.34 percent in 1971 to 1.21 percent in 1978; the first stage target of the Planned Birth Program is a further reduction to 0.5 percent in 1985 and the second stage a reduction to zero by the end of the century. As we shall see, to meet these targets would require unrealistically low fertility (much lower than ever recorded for a national population). Somewhat less ambitious targets (keeping the total population below 1.2 billion in the year 2000) are under discussion now.

Population policy for the future

The population policies that China requires fall in two broad categories, the first of which is exemplified by the current and proposed programs of the Chinese Government to bring about a rapid decline in birth rates. In short, the first category is the set of policies that are designed to modify the future development of the population in a desired direction. The other kind of population policy is the adjustment of social and economic planning to population trends that can be foreseen, but not modified. For example, the large number of births in China between 1960 and 1980 has inevitable implications for the approximate size and age composition of the labor force 15 or 20 years from now. The sequence of declining births in the 1970s has more immediate implications for the future number of children of school age. Thus, the second kind of policy is the formulation of plans for education, housing, and the utilization of the labor force in the light of predictable population changes.

Demography in China

As is well known, during the past few years university activities were brought to a virtual stop in China, as was research in population studies and related disciplines, including sociology and modern statistics. Moreover, there was little study of demography in China even before the Cultural Revolution, and resources in statistics and the social sciences were relatively meager. Research in demography has now begun at the Institute of Population Research of the People's University in Beijing, at Beijing University, at the Beijing College of Economics, and in eight or ten other universities, but the handicaps that these programs face—of little prior training and a decade of no professional work—are formidable.

The thin supply of qualified persons for demographic work is matched by the absence of detailed population statistics and of expertise in collecting and analyzing quantitative empirical information. There is in China no tradition of periodic censuses, as in Korea, Taiwan, India, and Egypt (to name some of the developing countries that have had half a dozen or more censuses at intervals of no more than a decade). Recent census experience in China, including the censuses of 1953 and 1964 and the large-scale sample surveys in 1975 and 1978, provides data of limited usefulness for demographic analysis, since detailed tabulations and cross-tabulations have not been published. There may be single-year age distributions from these censuses that have limited circulation in China, but the census schedules were limited in scope, and open publication of the results has not occurred. A second statistical base that is very weak in China is sample surveys that include demographic topics. Some of the research institutes have conducted local surveys, but there are few Chinese with the requisite skills in sample design, the design of questionnaires, the planning and execution of field work, the compilation and publication of detailed tabulations and cross-tabulations, and the analysis of survey results. As a consequence this source of data, which provides demographic research in other parts of the world with a large fraction of its useful subject matter, can be developed only with a major effort and much technical assistance. Finally, although one hears that the registration of births and deaths is virtually complete, the contents of the registers are compiled only at the local level. Data on the number of births classified by birth order, age and duration of marriage of the mother, place of residence, and so on, and data on the number of deaths classified by age and sex of the decedent, cause of death, and so on, are not compiled at the national or provincial level.

Demographic analysis and control of the future growth of China's population

Chen Muhua's speech referred to earlier ("Realization of the four modernizations hinges on the planned control of population growth") contains a comprehensive analysis of the advantages of reducing the birth rate in China. It sets two kinds of targets—first, a growth rate of 5 per thousand in 1985 and zero in the year 2000, and second, the elimination of births of third or higher order, and the increasing predominance of the one child family, as steps that presumably will permit the attainment of the intended rates of increase.

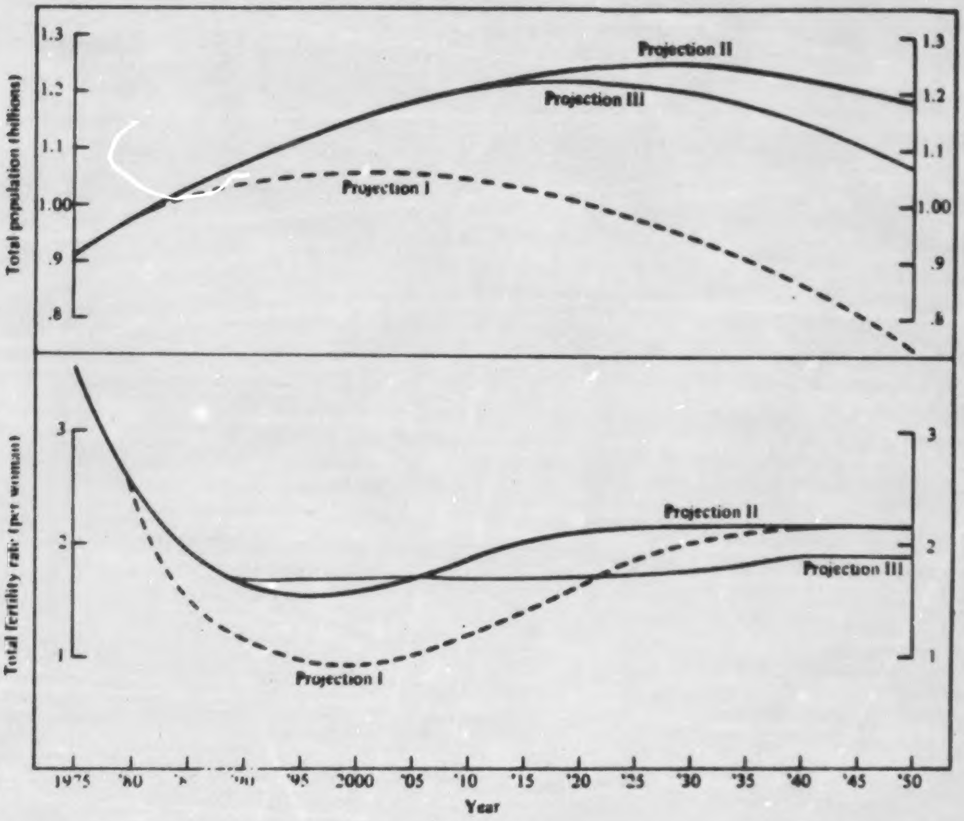
To develop in detail the final version of policy on population growth, to monitor and execute the program as it evolves, will call for a very great increase in Chinese capacity for demographic research. First of all, the social costs and benefits of alternative future population trends should be thoroughly explored. At Princeton, we have made three illustrative projections into the next century of the Chinese population to show the purely demographic implications of different trajectories of future fertility. All of the projections start with a total population of 910 million in 1975, the age distribution for the two sexes combined recorded in the large epidemiological survey conducted in that year, and sex ratios for each cohort estimated from a sex ratio at birth of 106 males for every hundred females, and from sex ratios by age recorded in the 1953 and 1964 censuses. The birth rate in 1975 was estimated as 24.6 per thousand, falling to 19 per thousand in 1980. Expectation of life at birth was taken as about 65 years (two sexes combined) in 1975–80, rising to 70 years by 1995–2000. In Projection I, fertility was reduced so as to yield a growth rate of 5 per thousand in 1985 and then to change so that the growth rate fell linearly to zero in 2000. After 2000, the annual number of births is held fixed. In Projection II, the birth rate is assumed to fall to 16 per thousand in 1985, and thereafter projected fertility is adjusted to hold the annual number of births fixed. In Projection III, the same sequence of fertility is assumed as in II until 1985; then the total fertility rate becomes 1.7 in 1990, where it remains until 2020, thereafter moving up to 1.9.

Significant features of these projections are shown in Figures 3 and 4. The changes in total population and in the total fertility rate (average number of children born per woman in a lifetime at current rates) are shown in Figure 3. Note that the total population peaks at about 1.05 billion in 2000 in Projection I, and at slightly over 1.2 billion some years later in Projections II and III. Projected populations I and II would ultimately become stationary (in the twenty-second century) at 623 million and 1.15 billion respectively; population III would continue to decline slowly from a peak of 1.22 billion in 2020, reaching 822 million in 2100.

The decline in fertility required to reach zero growth by 2000 is extreme. The total fertility rate in Projection I must fall to the very low minimum of less than one child per woman for a decade, because the attainment of zero growth is projected during a future period when there is a large concentration of persons at the principal parental ages and still relatively small proportions at the oldest ages, so that the death rate is still very low. In Projection II, the total fertility rate needs to dip to less than 1.6 at the turn of the century to hold the annual number of births constant at the projected 1985 level.

In Figure 4 the age distributions (proportions in each five-year interval) in 1975, 2000, and 2035 are shown for Projections I and II. Note the high proportions at younger ages in 1975—the result of high average birth rates that persisted until the 1970s. In 2000 the large cohorts born in the late 1960s (those aged 5 to 10 in 1975) constitute a peak in the age distribution at 30 to 35; in 2035 the peak is for persons in their 60s. This shifting peak is an inevitable feature of the Chinese population in the years to come, since the large cohorts in question are already born. The large numbers will be at young adult ages in 1995 and 2000, requiring very low fertility to maintain a low rate of increase. This very low fertility, in turn, produces a very small proportion of young people in the population of subsequent years. If, as in Projection I, births were to remain fixed in number after 2000, fertility would gradually rise

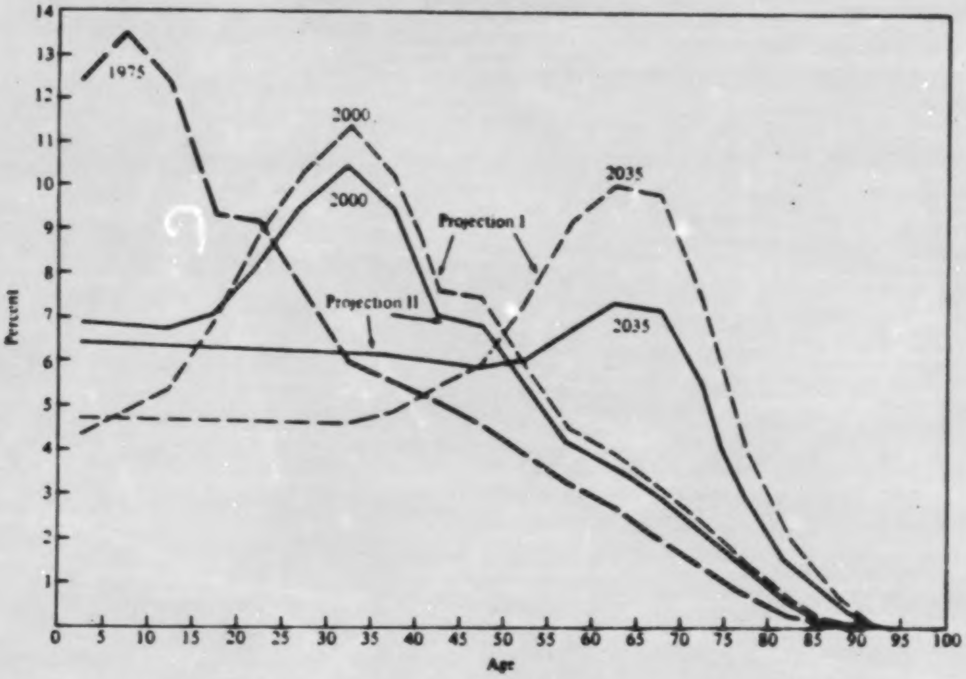
FIGURE 3 Three projections of the population of China, 1975–2050



to the level needed for zero growth when the age distribution had adjusted to the stationary state. The impracticality of the population generated by reaching zero growth in 2000 becomes evident in 2035, when the bulge in the age distribution has reached older ages. This population, with twice as high proportions in the age decade of the 60s than in all age decades less than 40, would present formidable social and economic problems. The age distribution of Projection II also has higher proportions in the 60s in 2035 than at other ages, but the imbalance is much less severe. There is a trade-off between a less distorted age distribution with a less drastic decline in fertility, and a slightly larger total population. (The age distribution of Projection III is not shown—it is intermediate between I and II, closer to the latter.)

These projections illustrate a well-known demographic principle—the principle of the *momentum* of population growth. Rapid growth in the past has created the kind of age distribution in 1975 shown in Figure 4. Given such an age distribution, reduction of the rate of childbearing to a level where each couple on the average produces just two surviving children (long-run replace-

FIGURE 4 Projected population structure of China, 1975, 2000, 2035: percent in each five-year age interval



ment fertility) does not immediately stop the growth of population. The large number of young people brought into being by past high fertility will replace themselves—it is these large cohorts that set the size of the ultimate stationary population. Because fertility was not reduced in the 1950s and 1960s, the population of China must continue to grow. Realistically, positive growth must be accepted into the next century. Neither the extremely low fertility required to stop growth by 2000 nor the subsequent extremely unbalanced age distributions are acceptable as practical goals of policy.

Momentum of population growth can be compared to the momentum of a moving railroad train. Suppose it is desirable for a fast-moving train to stop: the brakes must be applied long in advance of the point where forward motion is to end. If it is desirable to stop the growth of the Chinese population by the year 2000, the deceleration should have begun in the 1950s. Since the reduction in fertility did not begin then, a delay in the cessation of growth beyond 2000 must be accepted. The failure to put on the brakes earlier cannot be compensated by building a brick wall across the tracks now.

These projections, which show the future implications of present choices, illustrate in a simple way the value of demographic research in formulating Chinese population policies. Professor Liu Zheng has constructed a projection that closely resembles our Projection III, and presents it as a more realistic possible target than a zero rate of increase in just twenty years.[6] In other words, demographic research is already playing a part in Chinese discussions of policy.

There are complex policy issues that are not addressed by these projections. The programs proposed to cause fertility to fall are intended to persuade the Chinese to marry later, to have only one child, to delay a second child if the couple does not stop with one, and not to have births of higher order than two.

The social changes required to bring about these new patterns of family formation—and the effects of the new patterns themselves—must be analyzed. A total fertility rate of 1.7 for a cohort with no childless couples and no births of order higher than two means 30 percent with one child and 70 percent with two. In the United States, it is estimated that 30 percent of the women now 25–29 will bear no children. This cohort would have a total fertility rate of 1.7, if the women bearing at least one child had an average of 2.43. Is childlessness—except for the involuntarily sterile—unthinkable in China?

Projections illustrating the likely impact of any proposed program should be constructed in terms of cohort fertility, beginning with the current cohort patterns of age at marriage, the current parity distribution, and current and future births by order of birth. Projected cohort fertility that takes account of the initial position of cohorts must be translated into period fertility and incorporated in the projection of the future population.

Demographic research of other kinds is needed to analyze the role population change will play in the future development of the Chinese economy. A massive transformation of the occupational structure is inevitable as the economy modernizes. China is now more than 80 percent rural, and most of the labor force is still engaged in manual labor, predominantly in agriculture. With full modernization, at most a few tens of millions would be required as farm residents. (Only 6.5 million Americans now live on farms.) Ordinarily, the shift away from primary industry is accompanied by a shift to urban residence. Such a course in China would imply an urban population of six or seven hundred million some time in the next century. Development plans must accommodate either complex occupational structures in villages or an extraordinary urban growth.

Basic needs for the development of demography in China

A basic characteristic of modern population science is empiricism. Most of mathematical demography and other theoretical aspects of population study deal with concretely measurable quantitative concepts. Useful demographic work requires a solid foundation in extensive and accurate population data.

China is planning a census in the near future. It should embody modern census technology, including a more extended questionnaire administered by specially trained enumerators to a scientifically chosen sample in addition to the 100 percent count using a shorter form, and it should be tabulated and cross-tabulated by computer and published in full. Whatever detailed tabulations can be recovered from past censuses and surveys should also be made available to all of the potential demographers in China. Vital statistics should include essential information such as age, sex, and cause of death of decedents, and be compiled and published for the nation and geographic subdivisions. Periodic intercensal sample surveys—annual or semi-annual—should assemble up-to-date information to supplement the census. Special surveys on particular topics should be developed and conducted by demographic research units.

Enrichment of the stock of data on the Chinese population should include testing the completeness and accuracy of existing information and of future information as it is collected. Samuel Preston and Judith Banister have applied newly developed techniques of estimating completeness of death records to the deaths recorded in the epidemiological survey of the mid-1970s, and conclude that about 15 percent of deaths were omitted.[7] Tentative reverse projections applied to the 1975 and 1964 age distributions to estimate births suggest an underregistration of births of 20 percent or more in the late 1950s and early 1960s. The birth and death rates shown in Tables 1 and 2 and Figures 1 and 2 must, therefore, be viewed with reservations about their validity until more comprehensive tests of quality can be applied. Techniques of verification can now be quite effective: they should be adapted to Chinese data and widely used.

Centers of population research are being established in about a dozen Chinese universities and the Chinese Academy of Social Science. At the universities, both research and training are planned. In my report to the United Nations Fund for Population Activities after I visited China, these recommendations about research and training were included:

> First, it must be noted that training and research are naturally complementary activities. University professors and government officials concerned with demography extend their own training when they engage in practical research. Also, training at the graduate level in demography should include exposure to and experience in population research.
>
> The graduate courses in population should incorporate from the outset a core of analytical and technical demography. They should also encompass the study of fertility, mortality, nuptiality, and marital status, age composition, the composition of households, migration and urbanization, techniques of population projection, economic activity rates by age and sex, vital statistics, mathematical demography, techniques of population projection, the relation between population changes and social and economic development, historical demography, and the history of demographic thought. The training should emphasize research using solid empirical material. It should involve interaction between the Government officials concerned with population matters, and the academic research centers, and should treat not only the data from censuses and vital statistics as these become available, but also survey material gathered again by government and academic organizations.
>
> For several years to come, the initiation and development of good programs of research and training must call on the continued use of foreign consultants and lecturers. It is important that the persons invited be selected wisely, not only for their high level of competence, but also for suitable areas of specialization. The areas of specialization should be diverse, including specialists in most of the areas that were enumerated in an earlier paragraph as suitable topics of future research and training.

> Perhaps even more crucial for the successful development of population sciences in China is the training in the near future of a number of able young men and women, chosen because of their mastery of the relevant foreign language and a good background in mathematics and statistics. The best qualified should be sent to training centers that offer good programs and that are experienced in training foreign students. The most highly qualified students could study for a year or more at various universities in the United States, Australia, Canada, and Europe.
>
> Lastly, it must be emphasized that the successful development of demography in China will depend on the building up of libraries, and making access to these libraries possible for those engaged in either research or learning in demography. The virtual absence of substantial libraries is made more serious as a barrier because of the dominance of English and secondarily French in the existing extensive literature in the field. It appears inevitable that for a few years the Chinese who become expert in population must acquire a fluent reading knowledge, at least, of English and also for many of French. It will be necessary at the same time to acquire a substantial library, or more realistically, a set of libraries, in these foreign languages in order to increase the accessibility of the basic demographic literature. It will probably be necessary to translate certain key works into Chinese.

This is a formidable agenda. Demographers will now watch with interest what happens not only to the growth of the Chinese population, but also to the growth of population science within China.

Notes

1 Wang Naizong, "Solving China's population problem," *China Reconstructs* 19, no. 4 (April 1980): 5. Cited in Aird (note 2).

2 John S. Aird, "Reconstruction of an official data model of the population of China," paper presented at Conference on Population of China, East-West Population Institute, East-West Center, Honolulu, May 1980. The same graph was read by Roland Pressat ["Evolution des naissances en Chine," *Population* 35, no. 4–5 (July–October 1980): 968–972] with minor differences for some years.

3 Zhu Zhenggzhi, "China's population problem at present and its developing trend," *Jingji Kexu* (March 1980).

4 Liu Zheng, "The recent selection and development of China's population," paper presented at Beijing International Round Table Conference on Demography, October 1980.

5 J.-N. Biraben, "Naissances et répartition par âge dans l'empire Russe et en Union Soviétique," *Population* 31 (1976): 441–478; and Frank Lorimer, *The Population of the Soviet Union* (Princeton: Princeton University Press, 1946), pp. 133–136.

6 Liu Zheng, cited in note 4.

7 See Judith Banister and Samuel H. Preston, "Mortality in China," in this issue.

Part 2
Biomedical Research

Biomedical Research Needs and Possibilities in the People's Republic of China

Sheldon J. Segal

We at the Rockefeller Foundation have been working with colleagues in China ever since the recent normalization of relations between China and the United States. We were invited to return by Chinese colleagues in the period between the announcement of normalization and the actual event on January 1, 1979. The activities that have been initiated in the biomedical area include work with Beijing University, with the Chinese Academy of Sciences, and with the Chinese Academy of Medical Sciences.

Before my visit to China in January 1979, a policy was announced by the Chinese Academy of Sciences to establish a new institute of developmental biology. We subsequently had the privilege to work with the Chinese toward the development of the institute. On my visit in October 1980, I visited the construction site and saw the building, which when finished will be a modern three-story laboratory. The Rockefeller Foundation also provided fellowships for the scientists of the Chinese Academy of Sciences, not only to staff the new institute, but also to participate in modern scientific work at other institutes of the Chinese Academy of Sciences. In total, we have now provided 11 fellowship-years of support for Chinese scholars to work in the United States.

Beijing University requested our assistance to develop a 1980 summer course in the fields of developmental and reproductive biology for undergraduate students from that university and from other universities and institutions. Two Chinese-speaking American scientists taught the course, and 25 students from different areas of China participated. There will be a repetition of that course in summer 1981 for which we will probably give assistance.

The Chinese Academy of Medical Sciences--which has its headquarters in the former administrative offices of what was once Peking Union Medical College and is now the Capital Hospital and Medical School complex--is now host to an officer of the Rockefeller Foundation: Katherine Ch'iu Lyle, who is collaborating in a variety of activities with the staff of the Chinese Academy of Medical Sciences. She currently is offering, in Chinese, a course on life table analysis and is translating many documents that relate to statistical design and project design for clinical research. In addition, Lyle is assisting in an investigative study on gossypol, which is being used in China as an experimental drug for the regulation of male fertility. The Rockefeller Foundation is assisting in that experimental study as well. In this biomedical field, we can expect to cooperate with and learn from our Chinese colleagues.

I also would like to discuss broad areas of biomedical involvement in China's population program and perhaps outline some of the possibilities for research. First, the field of obstetrics and gynecology is obviously of vital importance in the Chinese population program. With an estimated 18 million births a year, China may have the largest system for obstetrical services in the world. There is no doubt that maintaining the high quality of these services is an important part of the population program in China. The vice-premier for science and technology, Fang Yi, in discussing the UNFPA country program proposal, made a pertinent statement: He said that China is perhaps the only country that is asking its people to have one child per family. For the people to believe the government and have trust in it, the government must make every effort to ensure that that one child is healthy, and a child of good quality. Therefore, advancement in the fields of obstetrics and maternal and child health is of high priority in China, even in the context of the population program. This is, therefore, an important area when considering the biomedical needs in population work in China.

If one assumes that China has an infertility rate comparable to that of most Western countries, then there are perhaps 5-10 million couples in China who wish to have a child but are unable to do so. Unfortunately, the opportunity has not been available in the past 15 years for China to keep up with the great advances that have been made in Western science in the diagnosis and treatment of infertility. The so-called fertility drugs--ovulation-inducing drugs now widely used in this country, Western Europe, and Latin America--are not available in China, and studies on their applicability, dosage, formulation, and so on have not been carried out there. This is an area of research in which the Chinese are most interested and that deserves our fullest attention. Similarly, surgical advances for the treatment of infertility of both men and women have not yet been introduced to China. In the field of male infertility, the recent recognition of the importance of varicocele as it relates to a cause of male infertility has not yet been used diagnostically. This is a subject of immense importance, in my judgment, and should be investigated fully in China. In October 1980, Julian Frick, an Austrian urologist, and Elsimar Coutinho, a Brazilian gynecologic endocrinologist, provided an infertility clinic for Chinese couples in Beijing. It was perhaps the first such effort by foreign specialists in China and revealed the importance of encouraging China to modernize its efforts in this field.

Research on abortion in China has not been carried out to any significant degree. Although we know very little about the actual incidence of abortion, we do know that abortion services are available freely throughout the country. In fact, the now widely used procedure of vacuum aspiration for termination of early pregnancies originated in China and has since spread throughout the world. The Tientsin (Tianjin) study that Lyle et al. undertook in the summer of 1979 (reprinted in this volume), based on a relatively small 1978 sample, revealed that in two hospitals there were two abortions for every three live births. We do not know whether that general figure applies to the large rural population or even to other urban centers in China, but I think we may assume the possibility of this ratio until more complete data are available. The availability of accurate data on incidence is important for the analysis of long-term and short-term sequelae to abortion in China. Another subject that needs investigation is the relationship between surgical termination of pregnancy, under the conditions in which it is done throughout China, and the well-known high incidence of hydantiform mole and more advanced forms of trophoblastic disease in China. A cause-and-effect relationship still needs to be investigated.

Similarly, research on sterilization has not been carried out. There are remarkably large figures reported from Sichuan Province, for example, on the number of vasectomies that have been performed. That province reports having done between 8 million and 10 million vasectomy operations in the past decade or so. There is little known about postsurgical sequelae; indeed, very little is known of the accuracy of the figures or their relationship to some of the infertility statistics in Sichuan.

Other important opportunities for research in China might focus on some behavioral aspects of reproduction. Premarital sexual activity is reportedly very low in China; one-partner sexuality is the rule rather than the exception. Even sexual activity within marriage is low by Western standards, according to anecdotal comments by Chinese physicians and social scientists. Such practices offer some interesting opportunities for research on patterns that might be unique to China. Indeed, many areas of study hitherto puzzling to Western researchers because of limited data might be successfully pursued in China: the study of sexually transmitted disease, including herpes virus and the relationship between sexually transmitted virus and cervical cancer. Although an estimated 60 percent of all contraceptors are IUD users, there has been no research on increased incidence of pelvic inflammatory disease in women who use IUDs.

In the field of contraceptive research in general, however, China has not been dormant. China has, for example, developed its own form of IUD, a V-shaped copper-bearing device. The published reports of its effectiveness have been truly remarkable. No IUD available in the Western world meets the performance figures that were reported in the Shanghai study on this device. I think that our Chinese colleagues need to look carefully at their methodology for evaluating IUDs, which has become a very sophisticated field in the last 15 years. A great deal of experience has been gained in the West on how to carry out evaluations, the validity of interstudy comparisons, the importance of clinical factors, the availability of other methods, the characteristics of subjects, and so on. Reevaluation of the various Chinese devices would be of great importance, it seems to me, and should include comparisons with devices now available in the West. Recent developments along this line include a planned comparative study of the V-shaped device with the Copper T-380, one of the new copper-bearing devices developed by the

Population Council. That study will take place, incidentally, in the context of one of the projects of the UNFPA country program.

Other contraceptive research in China has included the use of steroids as both a weekly and a monthly pill but, in my judgment, there is nothing new here. Compounds that are well known to us in the West have been evaluated, and in the case of the weekly pill dropped, because of limitations in the usefulness of the method.

The work that China has done with male contraceptives is more interesting. Gossypol, for example, has been widely tested in China by a cooperating group representing many provinces. About 8,000 subjects have been analyzed in detail, and the high rate of effectiveness seems to be indisputable. Questions of reversibility and safety remain for further investigation, and such an investigation is now being planned by the Chinese Academy of Medical Sciences in collaboration with the Rockefeller Foundation. The work in China will be carried out in several centers. A protocol has been carefully designed; there will be collaborating international centers as well.

I would like to make one point about contraceptive safety. China has done very little study of the safety of existing methods of contraception. This does not indicate, however, that they have been cavalier about safety issues in experimenting with new methods, and we should be careful not to impose our own regulations on Chinese colleagues. The Chinese have a system for deciding whether drugs should be offered for experimental use, and they have a system for deciding whether volunteers should be included in such a study. I doubt seriously that we have developed systems that are superior to those of the Chinese. Finally, as we look at the opportunity and needs for biomedical research in collaboration with Chinese colleagues, we should note carefully the kinds of collaborative activity already instituted, to avoid encumbering them with too much cooperation.

The UNFPA program, which started with 8 projects and is now up to at least 15, is very comprehensive, and there are several components on the biomedical side. The program includes research on contraceptive development and safety as well as epidemiological research in maternal and child health and other fields. The World Health Organization is assisting the Chinese government in implementing these research activities under the UNFPA program. The program also includes a project on the manufacturing of contraceptives. The UNFPA will fund an institute to study basic reproductive and developmental biology as well as a new institute of family planning research that will include both biomedical and operational research. The construction of that institute has been delayed by a year, but the staffing of it and the other components such as training workshops are moving ahead. Thus, what we must do is investigate the needs and opportunities that I have described and, most important, do this in cooperation and coordination with colleagues in the field who are undertaking similar efforts.

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Perinatal Study in Tientsin: 1978

Katherine Ch'iu Lyle,[1] Sheldon J. Segal,[2] Chih-cheng Chang[3] and Li-chuan Ch'ien[4]

[1] *Center for Biomedical Research, The Population Council, New York, New York, USA*
[2] *Population Division, The Rockefeller Foundation, New York, New York, USA*
[3] *Department of Obstetrics and Gynecology, Tientsin Medical College Hospital No. 1, Tientsin, People's Republic of China*
[4] *Department of Obstetrics and Gynecology, Tientsin Medical College Hospital No. 2, Tientsin, People's Republic of China*

ABSTRACT

Lyle KC, Segal SJ, Chang C, Ch'ien L (Center for Biomedical Research, The Population Council, New York, NY, USA, Population Division, The Rockefeller Foundation, New York, NY, USA, and Dept of Obstetrics and Gynecology, Tientsin Medical College Hospitals No. 1 and No. 2, Tientsin, People's Republic of China). Perinatal study in Tientsin: 1978.

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Clinical records of a total of 3320 singleton births, representing the year 1978, at the two Tientsin Medical College Hospitals, Tientsin, People's Republic of China, were studied to ascertain (a) reproductive parameters such as the average age of the mothers at first and successive births and (b) the relationships between perinatal deaths, prematurity and birth weight and the mother's age, number of previous pregnancies, parity, maternal conditions in the prenatal and delivery period and operative procedures of delivery.

INTRODUCTION

Although there is a large, growing body of literature on the subject in the Western world, perinatal studies are still a developing interest in China. A specially designed study was necessary to explore the causes, effects and various related associations. The decision to study this topic in a Chinese milieu, using available clinical records, was motivated by the belief that significant advances in our understanding of perinatal wastage depend, in part, on the accumulation of knowledge from a variety of epidemiologic studies directed at different population groups. In addition, many of the associations found in Western culture are worth examining for replicability in the Chinese population.

Our primary purpose in examining perinatal mortality in Tientsin was to determine certain reproductive parameters, such as the average age of the mother at first and successive births, and to ascertain the relationships between (a) perinatal deaths, prematurity and birth weight and (b) such factors as the mother's age, number of previous pregnancies, parity, maternal conditions in the prenatal and delivery period and operative procedures of delivery.

MATERIALS AND METHODS

Background

Tientsin Municipality is divided administratively into eight urban districts, six suburban districts and five surrounding counties. By the end of 1978, the population of Tientsin was estimated to be around 7 million. Table I gives the figure for the population distributions by geographic division, sex, married women of reproductive age and number of contraceptors for 1978. Virtually all births are to married women, and, because of the Late Marriage Laws, the range of reproductive age in China is essentially 25 to 49 years. It is evident that a high proportion of Tientsin married women of reproductive age were using contraceptives of various kinds in 1978. Maternal mortality was 2.2 per 10 000, while infant mortality (ie, death at <1 year of age) was 13.0 per 1000 in 1978, as reported by the Tientsin Municipal Health Department.

Medical services in Tientsin

Under China's regionalization plan, the three-tier health care system operates in both the rural and urban areas of Tientsin. Municipal and special teaching hospitals belong to the first-tier health institutions, which are usually general and referral hospitals. The second-tier system includes district hospitals in urban areas and county hospitals in rural areas. These generally meet the health needs of their own districts or counties. Primary care is basically met by the third-tier health institutions that encompass the resident's committee health centers in urban areas and the commune health centers

Table I. Population distributions by geographic division, married women of reproductive age and number of contraceptors, Tientsin, 1978.

Geographic Division	Total Population	No. of Females (25–49 years)	No. of Female Contraceptors Aged 25–49	Contraceptive Prevalence Rate (%)
Urban	3 142 837	368 171	326 781	88.8
Suburban	1 552 742	178 183	135 254	75.9
County	2 497 076	290 124	211 832	73.0
Total	7 192 355	836 478	673 867	80.6

Source. Tientsin Municipality Planned Birth Office.

Table II. Population characteristics of Ho-ping and Ho-hsi districts, Tientsin, 1978.

District	No. of Females	No. of Females (25–49 years)	No. of Female Contraceptors	No. of Births	No. of Induced Abortions
Ho-ping	243 477	60 408	54 836	5028	2716
Ho-shi	208 856	50 530	45 845	4759	3729
Total	452 333	110 938	100 681	9787	6445

Source. Tientsin Municipality Planned Birth Office.

in the rural areas. Each health care institution has its own patient catchment area. In the area of maternal and child health, delivery occurs in the first- and second-tier health institutions only, while the third-tier health centers provide prenatal and well-baby care.

Study population

Our study population consisted of women who gave birth at the Tientsin Medical College No. 1 and No. 2 hospitals from January 1 to December 31, 1978. Both hospitals are first-tier health institutions. Analysis of perinatal mortality was restricted to the data concerning only the 3320 singleton births. Under the regionalization of medical services, the Obstetric Department of Hospital No. 1 was responsible, along with two other first-tier hospitals and two second-tier hospitals, for the Ho-ping urban district. The department was also responsible for referral cases from one suburban district and one rural county. In 1978, there were 2596 single births at Hospital No. 1.

Hospital No. 2 was responsible, along with one second-tier hospital, for the Ho-hsi urban district and was also responsible for referral cases from one suburban district and one rural county. In 1978, there were 724 single births at Hospital No. 2.

Table II shows the characteristics of the overall population from which Hospitals No. 1 and No. 2 draw their maternity patients.

The clinical records of the obstetrics departments of both hospitals provided the data to be studied. Records used included (a) the obstetric summary, which recorded variables on the age of the mother, utilization of prenatal care, education level, gravidity, parity, operative procedures, final diagnosis for mother and the newborn and cause of death; (b) the medical record, which supplied variables on date of the last menstrual period (LMP), physical and laboratory examinations at the time of delivery and mode of delivery; (c) the pediatric chart, which listed variables on mode of delivery, birth weight of the newborn and congenital malformations; and (d) the hospitalization summary, which gave information on the causes of death for the newborn (deaths occurring at <7 days) who were transferred from maternity to pediatric wards for special care. Cross-checking of all these records was done to obtain information that was missing or incomplete.

Working definitions

The beginning of pregnancy was considered to be the first day of the woman's last menstrual period (LMP). Gravidity is defined as the number of pregnancies including the current one, while parity is defined as the number of live births including the current one. The perinatal period extends from the first day of the 28th week of gestation to the seventh day of life. Gestational age (of the newborn or the dead fetus) is the interval in completed weeks that has elapsed between the first day of LMP of the mother and the date of her delivery, irrespective of whether the product of conception was live-born or without evidence of life.

It is possible, based on this working definition, to calculate gestational age on a consistent basis for all the deliveries in this study. The unit of analysis is the "delivery." Delivery includes categories of: (a) full-term delivery of live or stillbirths, (b) premature delivery of live births and (c) delivery of the dead fetus after the first day of the 28th week of gestation.

Perinatal mortality combines loss of late fetal life (>28 weeks in gestation) and death in early infancy (<7 days). The formula for obtaining the perinatal mortality rate is as follows: number of fetal deaths at 28 gestational weeks or more and infant deaths occurring up to 7 days of age (per 1000) divided by the number of live births and fetal deaths at 28 gestational weeks or more during the same year (per 1000). The group of surviving infants was used as a comparison group in our analysis of relationships.

Morbidity and mortality classification

Independent coding of the mother's intercurrent illnesses, but not past conditions, offers flexibility in examining the relationship between morbidity and pregnancy outcome. It was only possible to adopt a broad classification of morbidity in this study for reasons of variability in medical observations by physicians not guided by a research protocol.

Maternal conditions were assigned to a restricted set of categories: mild toxemia of pregnancy (ie, either edema with a weekly increase of 0.5 kg of body weight or hypertension at >24 weeks' gestation of >130/90 mm Hg); moderate toxemia (ie, edema, hypertension of >160/100 mm Hg, proteinuria [+]); severe toxemia, which includes both preeclampsia (ie, nonconvulsive stage characterized by hypertension, edema and proteinuria, either separately or together) and eclampsia (ie, convulsion and coma); heart disease; nephritis; anemia (ie, <10 gm–<8 gm of hemoglobin); premature separation of placenta; placenta previa; fetopelvic disproportion; postpartum hemorrhage; and mode of delivery. The selection of factors is limited in scope and is useful for broad indications of problems present at the time of delivery.

Although a few autopsies were done for perinatal deaths, the main source of information was the final clinical diagnosis of death by the attending physicians. Data on congenital malformations and causes of death, in view of these circumstances, are presumed to have a low order of completeness and accuracy. In the search for associations between perinatal mortality and prenatal conditions, gestational age and a few selected maternal conditions are of primary interest.

Analytical approach and statistical technique

Because of the hospital-based nature and the small number of deliveries in the present study, a broad classification of pregnancy outcomes (for the dependent variables) was used: Perinatal deaths were categorized as fetal deaths at 28 gestational weeks or more and infant deaths occurring up to 7 days of age. Live births were classified according to birth weight: babies weighing 2500 gm or less and those weighing 2501 gm or more.

Factors or the independent variables that were correlated to these events (the dependent variables) in a search for associations include: demographic variables (eg, mother's age, level of education, prenatal care, gravidity, parity) and intercurrent illnesses. Many of the variables involved in this are discrete. Examples are the dichotomies of maternal eclampsia and absence of maternal eclampsia. Other variables (such as birth weight) are, of course, continuous.

In general, frequency distribution was employed to determine various reproductive parameters. The case-control method was used to determine retrospectively the percentage of toxemic mothers (or other factors) in the groups of dead and surviving infants, respectively. The significance of differences of the independent variables between dead and surviving infants was tested by means of a contingency χ^2. The effects of various independent variables on the dependent variable of birth weight were also tested for statistical significance. Also, covariance makes it possible to hold constant the effect of covariables and to obtain a test of the difference between the two or three outcome groups in the dependent variable of the birth weight under investigation.

Limitations

It should be recognized that clinical records and specifically designed statistical records serve two separate functions. The clinical record is a unique personal record for an individual and allows for some speculation on the part of medical personnel. On the other hand, the statistical record is a form designed to produce conformity, and it requires precise decision.

Our dependence on existing clinical records for data imposed a number of restrictions on the scope of the investigation and the interpretation of the results. Several variables that would have strengthened the study had to be dropped because of the high proportion of records that did not have the required entries. Examples of this type include information on birth interval, prior pregnancies and prepregnancy weight of the mother.

Another aspect of clinical record-based study concerns the accuracy, completeness and consistency of the morbidity information available. Assessment of maternal morbidity during pregnancy and delivery was heavily dependent on reports of physicians who were not experienced in the research protocol, so the possibility of incomplete reporting for this study must be considered. Variability in medical observations would be expected to obscure some marginal relationships and probably reduce, but not eliminate, sizable differentials in risk factors.

In addition to the variability, accuracy and specificity in medical observations, there is a limitation in the size of the birth cohort under study. A much larger number of births than our sample of 3320 is needed to fully ascertain the associations of maternal morbidity and perinatal outcomes.

RESULTS

Reproductive parameters

The mean age of mothers for the 3320 single births was 29.5 years. Only 1.1% of the births occurred to mothers younger than 24 years of age and 6.9% to mothers 35 years and older, while the majority of the births, 92.0%, occurred to mothers 25-34 years of age (Table III).

A high proportion of mothers, 96.4%, received prenatal care that consisted of at least three visits.

The majority of mothers (54.5%) had received eight years of education. College graduates only constituted 7.8%, which may have been due to the effect of the Cultural Revolution education policy of "sending down" urban youths to the rural areas after finishing lower middle school. Illiterates accounted for 3.4% of the mothers, primary school graduates, 12.1%, and upper middle school graduates (two years beyond lower middle school), 22.2%.

Table III. Age distribution of mothers, Tientsin, 1978.

Age (years)	Mean Age (years)	No. of Mothers	Frequency (%)
<24	21.8	38	1.1
25-29	27.4	1810	54.6
30-34	31.5	1241	37.4
>35	36.9	229	6.9
Unknown		2	-
Total	29.5	3320	100.0

Table IV. Perinatal outcomes by parity, Tientsin, 1978.

Parity	Perinatal Deaths (N = 88)	Live Births (N = 3232)	All Deliveries (N = 3320)
1	55.7	65.5	65.3
2	30.7	31.7	31.6
≥3	13.6	2.7	3.1

Table V. Reported causes of perinatal deaths, Tientsin, 1978.

Cause	No. of Deaths (N = 88)	Frequency (%)
Stillbirth	51	57.9
Prematurity	6	6.8
Congenital malformation	7	7.9
Asphyxia	13	14.7
Postnatal infection	5	5.6
Hemorrhage	2	2.2
Sclerosis	1	1.1
Septicemia	3	3.4

The mean gravidity in our population was 1.7, while the mean parity was 1.4. The difference may be due to spontaneous abortions, induced abortions or both in the high parity group. Sixty-five percent of the births were first parity births and 31.6% were second parity births. Only 3.1% were third parity or higher (Table IV). The mean ages for first, second and third parity births were 28, 32 and 33 years, respectively.

Fifty-two percent of the births were males, while 47.9% were females. The male-female ratio was 108.8, with an SD of 1.8.

The mean birth weight was 3211.6 gm. The mean birth weight for male infants was 3250.4 gm and for females, 3169.3 gm.

There were 88 perinatal deaths among the 3320 births, which yielded a perinatal death rate of 27 per 1000, comparable to the 1971 US rate of 27.6 per 1000. The reported causes of perinatal deaths are presented in Table V. Among the causes for the 88 deaths, there were 51 stillbirths. Asphyxia accounted for 14.7% of the deaths, the next largest category.

Risk factors in perinatal outcomes

Three perinatal outcomes—perinatal death, prematurity (≤2500 gm) and mean birth weight—were

Table VI. Summary of χ^2 analysis of perinatal deaths, Tientsin, 1978.

Factor Tested	% with Factor		Significance of Observed Differences
	Dead	Live	
Age (years)			
≤24	2.3 (2)	1.1 (36)	0.0055
25–29	48.9 (43)	54.7 (1767)	
30–34	33.0 (29)	37.5 (1212)	
≥35	15.9 (14)	6.7 (215)	
Prenatal care			
No	13.3 (11)	3.3 (106)	0.0000
Yes	86.7 (72)	96.7 (3085)	
Education			
Illiterate	23.3 (20)	2.9 (93)	0.0000
Primary	16.3 (14)	12.0 (383)	
Junior high	41.8 (36)	54.8 (1754)	
Senior high	10.5 (9)	22.5 (720)	
College	8.1 (7)	7.8 (249)	
Gravidity			
1	48.9 (43)	58.9 (1904)	0.1305
2	26.1 (23)	23.0 (743)	
≥3	25.0 (22)	18.1 (585)	
Parity			
1	55.7 (49)	65.5 (2118)	0.0000
2	30.7 (27)	31.7 (1023)	
≥3	13.6 (12)	2.8 (91)	
Toxemia, mild			
No	92.0 (81)	90.4 (2923)	0.7471
Yes	8.0 (7)	9.6 (309)	
Toxemia, moderate			
No	83.0 (73)	82.5 (2668)	0.9652
Yes	17.0 (15)	17.5 (564)	
Preeclampsia			
No	78.4 (69)	90.3 (2917)	0.0005
Yes	21.6 (19)	9.7 (315)	
Eclampsia			
No	92.0 (81)	97.1 (3137)	0.0175
Yes	8.0 (7)	2.9 (95)	
Heart disease			
No	95.5 (84)	94.3 (3048)	0.8213
Yes	4.5 (4)	5.7 (184)	
Premature separation of placenta			
No	87.5 (77)	99.7 (3223)	0.0000
Yes	12.5 (11)	0.3 (9)	
Placenta previa			
No	93.2 (82)	98.7 (3191)	0.0001
Yes	6.8 (6)	1.3 (41)	
Fetopelvic disproportion			
No	96.6 (85)	94.5 (3053)	0.5297
Yes	3.4 (3)	5.5 (179)	
Postpartum hemorrhage			
No	97.7 (86)	98.1 (3172)	0.9089
Yes	2.3 (2)	1.9 (60)	
Nephritis			
No	89.9 (79)	99.3 (3209)	0.0000
Yes	10.2 (9)	0.7 (23)	
Mode of delivery			
Normal	63.6 (56)	72.9 (2357)	0.0000
Forceps assisted	4.5 (4)	12.7 (412)	
External version	1.1 (1)	0.6 (18)	
Cesarean section	11.4 (10)	9.3 (299)	
Breech extraction	19.3 (17)	3.3 (106)	
Suction extraction	0.0 (0)	1.1 (35)	

Table VII. Summary of χ^2 analysis of low birth weight, Tientsin, 1978.

Factor Tested	% with Factor		Significance of Observed Differences
	≤2500 gm	≥2501 gm	
Age (years)			
≤24	2.4 (3)	1.1 (33)	0.1137
25–29	59.7 (74)	54.5 (1692)	
30–34	29.0 (36)	37.8 (1176)	
≥35	8.9 (11)	6.6 (205)	
Prenatal care			
No	6.5 (8)	3.2 (98)	0.0798
Yes	3.5 (115)	96.8 (2970)	
Education			
Illiterate	7.4 (9)	2.7 (84)	0.0110
Primary	16.4 (20)	11.8 (363)	
Junior high	52.5 (64)	54.9 (1690)	
Senior high	16.4 (20)	22.7 (700)	
College	7.4 (9)	7.8 (240)	
Gravidity			
1	75.0 (93)	58.3 (1811)	0.0010
2	13.7 (17)	23.4 (727)	
≥3	11.3 (14)	18.3 (570)	
Parity			
1	81.5 (101)	64.9 (2018)	0.0002
2	14.5 (18)	32.3 (1004)	
≥3	4.0 (5)	2.8 (86)	
Toxemia, mild			
No	96.8 (120)	90.2 (2803)	0.0220
Yes	3.2 (4)	9.8 (305)	
Toxemia, moderate			
No	78.2 (97)	82.7 (2571)	0.2408
Yes	21.8 (27)	17.3 (537)	
Preeclampsia			
No	87.1 (108)	90.3 (2809)	0.2979
Yes	12.9 (16)	9.7 (300)	
Eclampsia			
No	87.9 (109)	97.4 (3028)	0.0000
Yes	12.1 (15)	2.6 (80)	
Heart disease			
No	90.3 (112)	94.5 (2936)	0.0793
Yes	9.7 (12)	5.5 (172)	
Premature separation of placenta			
No	99.2 (123)	99.7 (3100)	0.7880
Yes	0.8 (1)	0.3 (8)	
Placenta previa			
No	97.6 (121)	98.8 (3070)	0.4481
Yes	2.4 (3)	1.2 (38)	
Fetopelvic disproportion			
No	92.7 (115)	94.5 (2938)	0.5134
Yes	7.3 (9)	5.5 (170)	
Postpartum hemorrhage			
No	98.4 (122)	98.1 (3050)	0.0043
Yes	1.6 (2)	1.9 (58)	
Nephritis			
No	96.8 (120)	99.4 (3089)	0.0043
Yes	3.2 (4)	0.6 (19)	
Mode of delivery			
Normal	71.0 (88)	73.0 (2268)	0.0000
Forceps assisted	6.5 (8)	13.0 (404)	
External version	3.2 (4)	0.5 (14)	
Cesarean section	8.1 (10)	9.3 (290)	
Breech extraction	9.7 (12)	3.0 (94)	
Suction extraction	1.5 (2)	1.1 (33)	

Table VIII. Summary of analysis of variance of mean birth weight (gm), Tientain, 1978.

Factor Analyzed	Mean	SD	No. of Cases	Significance of Observed Differences
Age (years)				
≤24	2968.33	416.11	36	0.0000
25–29	3178.28	410.36	1766	F = 13.797
30–34	3258.56	421.17	1212	
≥35	3262.80	497.61	216	
Prenatal care				
No	3104.91	471.25	100	0.0082
Yes	3215.31	420.79	3085	F = 6.996
Education				
Illiterate	3049.25	409.78	93	0.0000
Primary	3169.37	454.11	383	F = 9.832
Junior high	3196.57	412.67	1754	
Senior high	3260.33	413.03	720	
College	3295.28	434.52	249	
Gravidity				
1	3152.72	411.19	1904	0.0000
2	3285.17	421.27	744	F = 16.190
3	3309.17	424.21	408	
4	3290.14	455.12	138	
5	3372.44	429.17	32	
6	3400.00	475.66	5	
7	3950.00	0.0	1	
Parity				
1	3165.37	419.27	2119	0.0000
2	3303.53	409.23	1022	F = 15.340
3	3244.03	519.83	72	
4	3327.86	420.71	14	
5	3237.50	370.53	4	
6	3300.00	0.0	1	
Toxemia, mild				
No	3204.20	423.71	2923	0.0021
Yes	3282.01	412.78	309	F = 9.468
Toxemia, moderate				
No	3212.11	417.20	2668	0.8906
Yes	3209.41	451.09	564	F = 0.019
Preeclampsia				
No	3217.05	420.98	2916	0.0274
Yes	3161.76	441.03	316	F = 4.872
Eclampsia				
No	3216.96	418.87	3137	0.0000
Yes	3036.11	521.00	95	F = 16.920
Heart disease				
No	3217.28	421.64	3048	0.0020
Yes	3118.26	440.00	184	F = 9.523
Separation of placenta				
Normal	3212.13	402.97	3223	0.2143
Premature	3036.67	505.52	9	F = 1.543
Placenta previa				
No	3212.22	401.35	3191	0.4951
Yes	3166.83	555.58	41	F = 0.465
Fetopelvic disproportion				
No	3210.30	419.31	3053	0.4579
Yes	3234.47	486.10	179	F = 0.551
Postpartum hemorrhage				
No	3206.89	420.68	3172	0.0000
Yes	3462.83	482.31	66	F = 21.672
Nephritis				
No	3212.24	421.40	3209	0.3406
Yes	3127.83	636.71	23	F = 0.908
Anemia				
No	3206.82	421.64	3114	0.0009
Yes	3338.98	446.71	118	F = 11.121

of principal interest to this study. Our statistical analysis centered on the correlations of perinatal outcomes with the independent variables of age, amount of prenatal care, education levels of mothers, gravidity, parity and maternal conditions during pregnancy. The results are presented in Tables VI–VIII.

Two limitations should be kept in mind in interpreting these preliminary results. First, the results for a given analysis are based only on known observations, ie, only the completely known observations are used in this analysis. The characteristics of the "unknown" may be sometimes quite different from those of the "knowns." Notably, the "unknowns" in our sample include birth weights of infants who died during the perinatal period. The birth weights of the 88 dead infants were not available from these two hospitals. Second, the specific results can not be generalized directly to any general population because of the nature of the sample. However, the relationships observed among the variables should indicate the trend in the general population.

Risk factors for perinatal death included age, prenatal care, level of education, parity, preeclampsia, eclampsia, premature separation of placenta, placenta previa, nephritis and mode of delivery. In our population, gravidity, toxemia, heart disease, fetopelvic disproportion and postpartum hemorrhage were found not to be significant (Table VI). The high incidence of eclampsia (102/3218) in this study may be attributed to a number of factors: (a) Tientsin Hospital No. 1 takes high-risk cases from outside areas and (b) the Tientsin population still suffers the aftermath of the 1976 earthquake, so that approximately 30% of the urban population still live in overcrowded, substandard temporary housing. Further, the water-borne Na^+ in Tientsin is quite high, and there is also the possibility of variability in medical observations by the clinicians not guided by a research protocol.

Mothers who were older than 35 and younger than 24 years were at higher risk of delivering infants who died during the perinatal period. The lowest death rate (approximately 23 per 1000) was for the infants of mothers aged 25–34 (Table IX).

Table IX. Perinatal death rates per 1000 deliveries by maternal age, Tientsin, 1978.

Age (years)	No. of Deliveries (N = 3318)	No. of Deaths (N = 88)	Rate (per 1000)
≤24	38	2	52.6
25–29	1810	43	23.7
30–34	1241	29	23.3
≥35	229	14	61.1

χ^2 = 0.0055.

Mothers who received no prenatal care had a higher risk of perinatal death of their infants (94 per 1000), as compared with 22.8 per 1000 for mothers with prenatal care. Education level was assumed to be associated with prenatal care utilization. However, level of education had no effect on decreased risk of perinatal death when age was a controlling variable. Because of the particular nature of our population, mothers with a college education also constituted the higher age group.

Parity was a significant factor in the perinatal death of infants. Mothers of parity 3 or higher were at a higher risk (116.5 per 1000) than mothers with lower parity (25.7 per 1000).

Maternal conditions during pregnancy have been associated with the risk of perinatal death. In our study, certain maternal conditions were seen as more often associated with perinatal death than with live birth (Table X).

Certain modes of delivery were found to be significantly associated with perinatal outcomes. Perinatal deaths were associated with breech extraction 5.8 times more often than were live births (Table XI). Also, a relatively high proportion, 9.3%, of deliveries required cesarean section. Aside from posing a relatively high risk of perinatal death, the effect of cesarean section on subsequent lactation was not elucidated in this population group, even though almost all mothers breast-fed their infants.

Prematurity was defined as a live-born infant with a birth weight of 2500 gm or less. It is essentially a definition of low birth weight and not necessarily of prematurity, which, strictly speaking, indicates births due to premature labor. Therefore, in our attempt to analyze "low-birth-weight infants," we dealt with two groups of infants: (a) those who were truly premature and (b) those who were full-term but had low birth weights.

It may well be that factors responsible for premature labor are different from those causing low birth weight in a full-term infant. Therefore, the risk factors demonstrated in Tables VII and VIII would be appropriately defined in relation to low birth weight.

Risk factors for low birth weight included level of education, gravidity, parity, toxemia, eclampsia, nephritis and mode of delivery. Factors such as age, prenatal care, preeclampsia, heart disease, premature separation of placenta, placenta previa and fetopelvic disproportion were not found to be significantly associated with low-birth-weight infants.

None of the significant χ^2 tests in Tables VII and VIII will be discussed here because most results confirm previous studies. Discussion of some of the nonsignificant results, however, may be helpful. For example, it was surprising to find that age and

Table X. Maternal conditions by perinatal outcomes in 3320 single deliveries, Tientsin, 1978.

Conditions	Perinatal Death (N = 88)	Live Births (N = 3232)	All Single Deliveries (N = 3320)
Preeclampsia	21.6	9.7	10.1 (334)
Eclampsia	8.0	2.9	3.1 (102)
Premature separation of placenta	12.5	0.3	0.6 (20)
Placenta previa	6.8	1.3	1.4 (47)
Nephritis	10.2	0.7	1.0 (32)

Table XI. Mode of delivery by perinatal outcomes in 3320 single deliveries, Tientsin, 1978.

Mode	Perinatal Deaths (N = 88)	Live Births (N = 3232)	All Single Deliveries (N = 3320)
Normal	63.6	72.9	72.7 (2413)
Forceps assisted	4.5	12.7	12.5 (416)
External version	1.1	0.6	0.6 (19)
Cesarean section	11.4	9.3	0.3 (309)
Breech extraction	19.3	3.3	3.7 (123)
Suction extraction	0.0	1.1	1.1 (35)
Unknown	0.0	0.2	0.2 (5)

Table XII. Low birth weight rates by age, Tientsin, 1978.

Age (years)	Low Birth Weight, ≤2500 gm (N = 124)	Normal Birth Weight, ≥2501 gm (N = 3106)	All Single Deliveries (N = 3230)
≤24	2.4 (3)	1.1 (33)	1.1 (36)
25–29	59.7 (74)	54.5 (1692)	54.7 (1766)
30–34	29.0 (36)	37.8 (1176)	37.5 (1212)
≥35	8.9 (11)	6.6 (205)	6.7 (216)

$\chi^2 = 0.1137$.

Table XIII. Low birth weight rates by prenatal care, Tientsin, 1978.

Prenatal Care	Low Birth Weight, ≤2500 gm (N = 123)	Normal Birth Weight, ≥2501 gm (N = 3068)	All Single Deliveries (N = 3191)
No	6.5 (8)	3.2 (98)	3.3 (106)
Yes	93.5 (115)	96.8 (2970)	95.5 (3085)

$\chi^2 = 0.078$

prenatal care were not significantly different among the low-birth-weight and the normal-birth-weight infants (Tables XII and XIII).

Further, the teenage mother is believed to be at higher risk of delivering a premature infant than is her older counterpart. In this study, a comparison of premature deliveries to mothers younger and older than 24 years of age revealed no significant difference in low-birth-weight rates. The reason may be due to the small number of mothers aged less than 24 years, who comprised only 1.1% of the total population. The highest percentage (8.9%) of low-birth-weight infants appeared in the 35 years and older age group.

In Western literature, the amount of prenatal care a mother received has been shown to be associated with low birth weight. Our attempts to analyze the impact of prenatal care on birth weight were disappointing, as women with no prenatal care accounted for only a small fraction of the total number of low-birth-weight deliveries (6.5%). Furthermore, if prenatal care does play a role in lowering the incidence of low-birth-weight babies, it is still necessary to determine the specific factors in such care which are responsible for the decrease.

Mothers younger than 24 years of age who received no prenatal care, who were illiterate, who delivered for the first time and who suffered certain complications during pregnancy, delivery or during both were at higher risk of delivering infants with lower mean birth weights than mothers who were not (Table VIII).

DISCUSSION

Our survey was an attempt to see whether our population differs substantively from others, so that we may find new leads in the epidemiology of perinatal mortality and morbidity.

The age differentials in deaths in this study are similar in pattern to those in Western countries. The exceptionally high rates occurred in births to mothers aged <24 and >35 years (52.6 and 61.1 per 1000, respectively).

In the context of China's new marriage laws, the minimum age for men is 25 and for women, 23 years of age in the rural areas; in urban areas, the marriage age is 25 years for both sexes. In our birth cohort, only 1.1% of the births occurred to mothers younger than 24 years. In the context of China's small family norm, the ideal family size is now considered to be the one-child family and the upper limit should not exceed two children per family. In our study, 65.3% of the births were first parity births and 31.6% were second parity births, while only 3.1% of the births were third parity and higher.

The factors responsible for prenatal care and reduction of perinatal mortality are related to standards of living and to the mother's attitudes, behavior and general approach toward having a baby rather than to anything that medical prenatal care can specifically address.

Low birth weight is more common in the undernourished population of nonindustrialized countries and is more frequent among the poor within each country and/or in teenage or older groups. China's social advance and new marriage laws, however, have made prematurity less an effect of environmental and biologic factors. Our study represents a single racial and socioeconomic group, so in the search for the causes of prematurity, it is particularly relevant to look for factors influencing medical conditions during pregnancy.

Furthermore, the relationships between prematurity and neurologic consequences can be elucidated. The role of prematurity in neurologic disorders of children and in mental retardation has been repeatedly confirmed. It has been determined that certain events of pregnancy, such as premature separation of placenta, placenta previa, eclampsia and chronic hypertensive disease, may affect the child's neurologic integrity. Congenital malformation may be an important end point for further investigation in our Chinese population because the mean age at marriage has gradually risen over the years. Apgar scoring to evaluate the newborn as an index of neonatal mortality and infant morbidity was instituted in late 1978 in Tientsin hospitals and may be useful in predicting neurologic morbidity. Of course, autopsy is extremely important in ultimately establishing true incidence of malformations, but these data were not uniformly available. In addition, a long-range prospective study of a group of the newborn population may be necessary to observe differences in health and disease that might be associated with chromosomal variations.

In our retrospective study, because of the limitations of existing records, we could not make the extensive evaluation of factors that the problems of pregnancy wastage require. In light of our current findings, it may no longer be profitable to look at gross relationships such as that between maternal age and perinatal mortality. Other demographic variables may lead investigators to studies of more specific and more definite kinds of relationships.

Also, there is the need for new variables and hypotheses. Many of the variables that are being looked at are essentially the same ones that have been discussed for a number of years. New variables that may be appropriate to our population in China might include: (a) cesarean section and the state of the infant's respiration; (b) the mother's working conditions (on farms, in factories, etc) and diet (eg, Chinese medicinal plants used as nutritional supplements during pregnancy) and their effects on perinatal outcomes; and (c) the relationship of waterborne Na^+ and toxemia of pregnancy (the Na^+ level, milligrams per liter, in Tientsin was quite high).

This paper has attempted to obtain certain baseline data for perinatal outcomes in Tientsin. More refined investigations of the items mentioned above may elucidate further the causes of prematurity and perinatal death.

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Address for reprints:

Katherine Ch'iu Lyle
The Rockefeller Foundation
1133 Avenue of the Americas
New York, NY 10036
USA

Part 3
Research on Family Planning

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Birth Planning in China

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By Chen Muhua
(Translated with an introductory note and commentary by Pi-chao Chen)

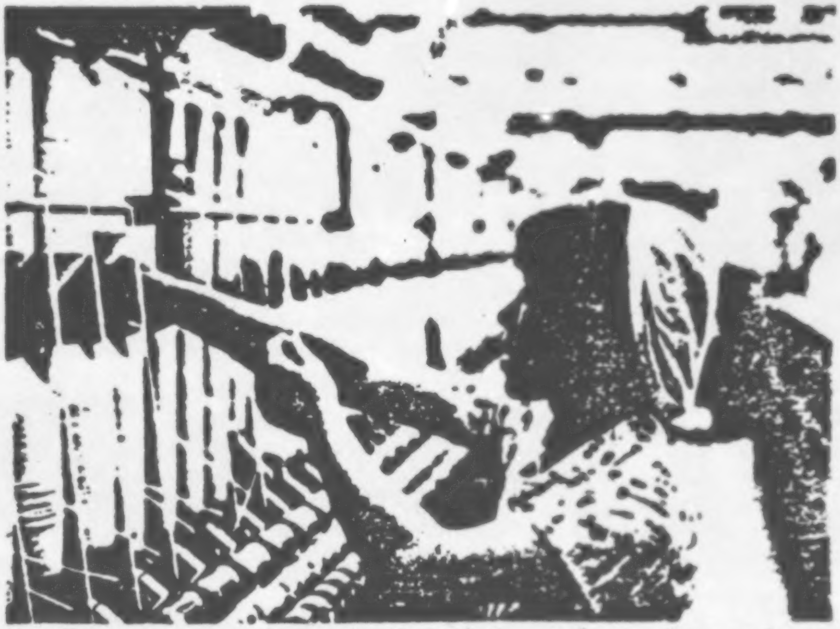
Translator's Introduction

Chen Muhua's article is by far the most informative, revealing and forthright discussion of China's population problems and birth planning programs by a high-ranking official to have come out of China in a long time.

For the first time since 1959, China's State Statistical Bureau has issued national data on population and the economy: As of the end of 1978, the total population of the PRC, including Taiwan, was 975,230,000. In this article, Vice Premier Chen reveals that the population of mainland China grew from some 540 million in 1949 to 960 million in 1978. The net increase of 420 million represents an average annual growth rate of 20 per 1,000 population over the 30-year period. At its peak during the 1960s, the crude birthrate was as high as 40 per 1,000. Starting in 1971, however, fertility began a precipitous decline, thanks to the resumption of the organized birth planning program following the hiatus caused by the Cultural Revolution. By 1978, the crude birthrate had declined to 18.34 per 1,000. Between 1971 and 1978, the natural increase rate was reduced by about half, from 23.40 to 12.05 per 1,000. As the Vice Premier points out, a decline of such magnitude in just seven years is a rare occurrence. The decline is especially remarkable in view of China's age structure and level of socioeconomic development.

By encouraging couples to limit themselves to one child and taxing those who have more than two, China seeks to reach zero population growth by the end of the century.

However, a natural increase rate of 12 per 1,000 results in the addition of 11.6 million people per year to China's population—a number larger than the total population of more than half of today's nation-states. Furthermore, because of the high fertility reached in the 1960s, the proportion of women of reproductive age will increase or remain very high in the coming decade. According to two Chinese demographers I interviewed last July, in the next decade or so there will be 22 million people (11 million couples) entering the marriage age (23 for women and 25 for men) each year. Thus, even if all eligible young couples practice the "three reproductive norms" of later marriage, three-year spacing between the first and second births, and no more than two children promoted by the birth planning program, China's population will continue to grow for at least a half-century before the country reaches zero population growth.



Rapid industrial modernization is seen to depend on quick attainment of zero population growth

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Chen Muhua is a Vice Premier of the People's Republic of China and is Director of the State Council Birth Planning Leading Group. Pi-chao Chen is Professor of Political Science at Wayne State University, Detroit, Michigan. This article is abridged from Vice Premier Chen's article "To Realize the Four Modernizations, It Is Necessary to Control Population Increase in a Planned Way," which appeared in *Renmin Ribao (The People's Daily)* on Aug. 11, 1979. Vice Premier Chen has been Director of the State Council Birth Planning Leading Group since its inception in 1978. The Group is a supraministerial agency responsible for implementing China's birth planning policy and coordinating and supervising the nationwide network of birth planning programs. Its deputy directors include several vice ministers, including the Vice Minister of Health, whose activities are related to birth planning. Pi-chao Chen has made several visits to the People's Republic to investigate its birth planning and population programs and policies, most recently with an International Planned Parenthood Federation delegation in June and July 1979.

During the interval, the population size will increase by 30–40 percent.

It was probably its rude awakening to this built-in momentum of population growth and its drag on development that prompted the government of the PRC to introduce drastic policy measures aimed at bringing about zero population growth in as short a time as possible. The new population control efforts were first revealed by Premier Hua Guofeng in his speech to the National People's Congress last June, and are elaborated by Vice Premier Chen Muhua in this article. A two-stage campaign is envisioned. The first stage calls for the reduction of the natural increase rate to 10 per 1,000 by the end of this year, and to five per 1,000 by 1985. Stage two calls for the achievement of zero population growth by the end of the century.

In pursuit of these unprecedented and ambitious time-specific targets, the government will soon issue a birth planning law aimed at encouraging the one-child family, Vice Premier Chen indicates. In accordance with the Chinese practice of "mass line," the government started to circulate a preliminary draft of the law early this year throughout the country. The Chinese people have been asked to debate the specific draft provisions and to channel upward their comments and reactions. Taking into account the feedback from below, the government will revise the draft and promulgate the final birth planning law, probably by the end of this year. While its exact provisions remain unknown, its main thrust and content were common knowledge among officials in the units and areas I visited last July. More significantly, by the end of August, at least nine provinces (Beijing, Tianjian, Sichuan, Shandong, Shanghai, Anhui, Hunan, Gansu and Guangdong) had taken the initiative and drawn up their own trial economic measures aimed at encouraging the one-child family. These incentive measures are discussed in some detail in the translator's footnotes that accompany this article. Here space allows us only to summarize them:

- *In cities, couples with only one child who pledge not to have any more, and who show that they are taking birth control measures to implement that pledge, may apply for a one-child certificate. The certificate will entitle them to a fixed stipend per month until the child reaches 14 years of age. The couples will be entitled to living space equal to that given two-child families, or will be given preferential treatment when they apply for housing. Their children will be given priority consideration for admission to school and application for jobs. When the one-child couples retire, they will be entitled to pensions over and above what they would otherwise receive under the current labor protection law.*
- *In rural areas, one-child couples will receive additional monthly workpoints (which are the basis of determining the amount of pay in kind and in cash in rural communes) until their child reaches age 14. The couples will get the same grain ration as two-child couples. All couples, regardless of family size, will get the same size plot for private cultivation and same size housing lot (an allocation based on four persons). In urban and rural areas, if an only child dies or becomes disabled, the parents may have another child and continue to enjoy the same benefits.*
- *The trial measures adopted by five provinces (Beijing, Tianjian, Hunan, Shanghai and Anhui) also contain stiff penalties for officials, workers and peasants who defy the government appeal to limit their family size to two children. For example, in Anhui, if an official or worker has a third or higher parity child within six months after promulgation of the economic measures, six percent of the combined total income of husband and wife will be deducted for "welfare expenses." The only exception allowed is in the case of multiple births. The percentage of income deducted will increase with each additional child.*

In her briefing to the National People's Congress delegates in June, Vice Premier Chen indicated that the central government has endorsed the trial measures adopted by six of the nine provinces, among which are Anhui and Tianjian.

Vice Premier Chen's article also elaborates on the concrete steps planned in order to reach the time-specific birth planning targets. There were 17.4 million births in 1978, of which 5.2 million were third and higher parity births. If this multiparity rate can be reduced by half, she notes, it will be possible to reduce the crude birthrate from 18.34 per 1,000 in 1978 to 15.59 per 1,000 by the end of 1979. If such multiparity births can be entirely eliminated, by 1985 the natural increase rate will be reduced to about seven per 1,000. Since this rate still falls short of the official target of five per 1,000, it will be necessary, she says, to encourage couples to have only one child. The Vice Premier maintains that it should be possible to achieve zero population growth by the year 2000 if every year of the next two decades, increasing proportions of young eligible couples—encouraged and sustained by the nation's new birth planning law—adopt the one-child family norm.

One-child families will be rewarded, those who have more than two will be taxed.

Vice Premier Chen does not indicate the targets of the one-child-family campaign in quantitative terms. According to a planned-birth official in Shanghai whom I interviewed, the hope (and not the target) of the municipal government is that eventually 80 percent of couples in the city proper, and 50 percent of rural couples in the 10 suburban counties under the municipal jurisdiction, will limit themselves to one child. This official deliberately refrained from giving a time frame within which the targets were to be achieved. It is also notable that socioeconomic conditions in Shanghai are more conducive to the spread of the one-child-family norm than they are elsewhere. Therefore, what Shanghai can contemplate may be more than what the other provinces dare to hope for.

Needless to say, if the government succeeds in eliminating all third and higher parity births and in persuading as many as 40 percent of urban couples and 25 percent of rural couples to limit themselves to one child, and if it can sustain this practice for several decades, the absolute size of the population of China will decline. P.-c. C.

In his "Report on the Work of the Government" to the Second Session of the Fifth National People's Congress (June 18, 1979), Premier Hua Guofeng designated firm control of population increase as one of the 10 important tasks in our current effort to develop the national economy. . . .

National economic development must observe the law of planned and proportionate development. This law requires not only that the . . . production of material means . . . but also that human reproduction develop in a planned way. Thus, the planned control of population increase in our nation . . . is not a subjective and arbitrary decision; rather, it is dictated and demanded by the socialist mode of production.

Theoretically, the superiority of the socialist planned economy makes it possible to regulate human reproduction, thereby achieving a balance between population increase and growth in the production of material means. But for a long time, we did not fully understand or study this problem, and failed to include population increase in our economic plan, leading to a situation where population growth proceeded in a blind way. . . . There are historical, economic and political reasons for this. There are also demographic reasons. In 1949, the population of our country was 540 million. It has since grown to over 900 million [960 million as of the end of 1978]; about 600 million people have been born since the liberation [1949], accounting for 63 percent of the total population. The annual average rate of natural increase was as high as 20 per 1,000. The net increase in population over 30 years has been 420 million—a growth of 78 percent. It is necessary to admit that under the concrete conditions existing in our country, our efforts to develop the national economy, improve the people's standard of living and create jobs have been rendered more difficult by rapid population increase. It has hindered the development of socialist construction of our country.

We must squarely face the fact that rapid population increase obstructs economic development. Under current conditions in our country, the question of whether or not to control population increase is not merely a question of whether to have fewer or more babies; it is a strategic question that bears on the development of our country's productive force, on the realization of the four modernizations* and on the transition from socialist construction to communism.

To a great extent, the degree of a nation's potential for increasing capital accumulation, and the pace of raising the people's living standards and of increasing national power, are determined by the relationship between the growth rate of the economy and the growth rate of population. Since liberation, our national economy has developed a great deal. But because the original economic base was rather small, and the population increased too rapidly, the increase in per capita output and in per capita income has not been large. During the same period, the economic growth rate of the advanced capitalist countries as a whole has not been as high as ours. But their original economic base was large, and their population grew at a slower pace. They have therefore achieved a more rapid increase in per capita output and per capita income than we have, as may be seen in the table below.†

Country	1950	1955	1965	1970	1978
Per capita grain output (in 1/2 kg)					
China	479	599	536	580	614
U.S.	2,001	1,936	2,196	2,164	2,750
France	810	882	1,292	1,326	1,362
Per capita income (in U.S. dollars)					
China	26	40	78	86	126
U.S.	1,748	2,184	3,245	4,362	7,029
Japan	195	248	786	1,630	4,183

In our nation, too rapid an increase in population unfavorably affects our efforts to bring about the four modernizations.

First, too rapid an increase in population is detrimental to the acceleration of capital accumulation. The principal avenue to capital accumulation is rapid development of agriculture and industry, and a rapid rise in national income. However, given a particular growth rate of industry, agriculture and income, the size and growth rate of the population strongly affects the volume and rate of capital accumulation. At the present time, the cost of raising an infant to 16 years of age is about 1,600 yuan in rural villages, 4,800 yuan in medium-sized cities and small towns, and 6,900 yuan in large cities [1.55 yuan equals one U.S. dollar]. . . . Based on these figures, the accumulated total cost to the state, the collective [e.g., the people's commune, the production brigade, the production team, etc.] and families of raising the 600 million persons born since liberation has been more than 100 billion yuan—or about 30 percent of the accumulated total national income over those years. . . . If there had been fewer births since liberation, say only 400 million, the state's capital accumulation would have been much larger, without creating any shortage of labor supply in the course of developing social production. Nor would fewer births have adversely affected human reproduction. . . .

Second, rapid population increase hinders our efforts to quickly raise the scientific and cultural level of the whole nation. The key to realizing the four modernizations is scientific and technological development. We must build a vast army of workers, peasants and intellectuals who are capable of grasping modern scientific and technological knowledge and managing modern production. We must also train many scientists, engineers and managers to achieve a competence equal to that of the most advanced countries in the world. This requires massive expansion of our educational enterprise. Ours is a poor country, and the amount of national income generated annually that can be expended on education is rather limited. But the number of persons to be trained, and the number whose scientific and cultural level has to be raised, is not counted in millions or tens of millions; it is rather several hundred million. Herein lies the contradiction. At the present time, six percent of primary school-age children are not enrolled,‡ 12 percent of the graduates of primary schools cannot go on to junior middle schools, and over half of the graduates of junior middle schools cannot go on to senior middle schools. Only five percent of the graduates of senior middle schools are admitted into institutes of higher learning.§ Related to this education problem is

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*Attainment of the four modernizations (of agriculture, industry, defense, and science and technology) by the year 2000 is the major policy thrust of the post-Mao leadership, although the late Premier Zhou Enlai (Chou En-lai) first articulated the theme as far back as 1964.

†The sources of the per capita income figures for China, the United States and Japan are not given. Nor is the method of computation. The figures are presumably stated in terms of current U.S. dollars (for each year). The figures provided for the United States are slightly lower than the per capita national product and higher than the per capita personal income figures shown for the same years in the U.S. Census Bureau's *Statistical Abstract of the United States, 1978* (Table 714, where, for 1976, they are given as $7,930 and $6,425, respectively). The U.N. *Statistical Yearbook, 1977* shows a 1976 per capita income figure for the United States of $7,030 and for Japan, of $4,478. It is important to point out that the Chinese do not include some categories of income generated by the service sectors (e.g., defense and government administration) in their account of national income. This means that the per capita income figures for the PRC shown in the table are underestimated and not directly comparable to the figures for the United States and Japan. The World Bank estimates per capita income for the PRC in 1976 to be $370 (see World Bank, *1978 World Bank Atlas: Population, Per Capita Product and Growth Rates*, Washington, D.C. [no date], p. 6).

‡In 1977, 146,164,200 young people aged 7–11 were enrolled in grade schools, representing 95.5 percent of the population in that age bracket (see Tao An-hua, "Ideological Education in a Primary School," *Peking Review*, Vol. 21, No. 36, Sept. 8, 1978, p. 15). In view of China's low per capita income and the massive investment required to enroll such a large number of students, the Chinese investment in education must be considered remarkable.

§According to two Chinese demographers, only one percent of men and women of college age are currently enrolled in institutes of higher learning (see Liu Cheng and Wu Chungping, "Population [Growth] Must Be Controlled," *Renmin Ribao*, May 15, 1979, p. 3).

Couples will not be taxed if a multiple birth has brought them over the two-child limit

rate will go down [from 12] to below seven per 1,000. If we further consider and put into effect the policy measures favorable to an increase in the proportion of first-parity births, the natural increase rate will probably decline to about five per 1,000 by 1985. Let us commit ourselves, adopt effective policy measures, and firmly prevent third-parity births—these are the keys to lowering the natural increase rate to five per 1,000 by the end of stage one of our campaign. For several years now, the natural increase rate in Zhangteh County, Hunan Province, has been stabilized at the level of four per 1,000. One of the lessons learned from this experience is that in this county, the phenomenon of multiparity births has been virtually wiped out.

We must promote and extend the practice of having one child. This is the primary method whereby we can bring the natural increase rate down to zero; it is also acceptable to the masses. In Hoping District, Tianjian (Tientsin), 50 percent of [married] women [of reproductive age] have indicated their intention not to have a second child. In Haitin, a suburban district in Beijing [Peking] with a substantial agricultural population, 36 percent of couples [of reproductive age] have only one child. All of this shows that if we exert our utmost efforts and energy and get the job done well, we can raise higher and higher the proportion of one-child couples.

The key [to success] is that the measures adopted must be effective. We must conscientiously sum up the experiences learned in our efforts to control population increase since 1971, and draw up appropriate measures:

1. *Strengthen the leadership of the party, and include planned-birth work in the work agenda of the party committees at various levels.* In Sichuan (Szechuan) Province, the natural increase rate was as high as 31.21 per 1,000 in 1971. By 1977, it had declined to 8.67 per 1,000. By 1978, it had further declined to 6.06 per 1,000—a remarkable accomplishment. The important lessons learned there are that the first secretaries of the party committees must take personal charge; the secretaries of the party branches must act on the problem concretely; "all the crew" (members) of the party committees as a whole must take hold of the problem, the higher level party committees must [supervise closely] the lower level party committees, and one link must grasp the other link.*

2. *Strengthen propaganda and education.* We must break through the "forbidden area" of population theory, liberate our thought and freely foster a public opinion in favor of controlling population increase. We must also break away from another invisible taboo. Some comrades have always thought that birth planning is something distasteful and therefore should not be propagandized in newspapers and broadcasts, as if to conduct open propaganda is something disgraceful. This kind of attitude is incorrect. Practicing birth planning and controlling population increase are a requisite for the realization of the four modernizations, as well as the desires of the people of our country. Why can't we conduct a pervasive propaganda campaign, and create a favorable climate of opinion? Henceforth, we must conduct propaganda with great fanfare, make it known to every household and every family, so as to forge a formidable social force making late marriage and birth control a kind of social habit.

3. *We must legislate. We must draw up necessary economic measures, and implement policies meting out both rewards and penalties, but with reward as the main emphasis.* The constitution of our country declares: "The state advocates and encourages birth planning." [Article 53 of the 1978 Constitution.] This is the legal basis of our efforts to control population increase. Several areas have already drawn up concrete legal provisions and economic measures, and have achieved some results in controlling population increase.† On the basis of the accumulated experiences of various areas, the central government has already drawn up a draft of a Planned Birth Law, and has been soliciting the comments of various units. We are

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*Because of its incredible performance in reducing the rate of natural increase to a level one-fifth of what it was only seven years previously, Sichuan, with over 90 million population, has been singled out by the central government as the model to be emulated, and its experiences have been given wide publicity inside the PRC.

†As of the end of August, nine provinces (Beijing, Hunan, Shanghai, Sichuan, Guangdong, Tianjian, Anhui, Gansu and Shandong) had drawn up provincial trial measures aimed at encouraging and rewarding the one-child family. The trial measures of the six latter provinces have been endorsed by the State Council Birth Planning Leading Group (see *Renmin Ribao*, July 1, 1979, p. 6). In accordance with the Chinese practice of mass-line politics, the central government encourages, actually requires, each area and province to draw up its own measures, while these are not to deviate from the intent of policy that has been centrally laid down, they are expected to take into account local conditions in order to achieve better results (see Pi-chao Chen, *Population and Health Policy in the People's Republic of China*, Smithsonian Institution Interdisciplinary Communications Program, Washington, D.C., 1976, pp. 10–15 and Appendix A and Appendix B). Space does not allow us to report in full the various trial measures adopted by various provinces. Here, we report the trial measures adopted by the provincial government of Hunan, which promulgated trial regulations in June 1979 providing that "the state will commend and reward couples of reproductive age who marry late and produce only one child." County and municipal birth planning offices will issue a one-child certificate and will commend and reward couples who have only one child and who have adopted effective measures to avoid having another. . . . Officials and workers in state enterprises or collectives [small-scale cooperatives] will receive an annual bonus of 30–40 yuan, and rural peasants will receive an annual bonus of 400 workpoints [the basis of computing income disbursement in rural production teams or brigades] until their child is 14 years old. A single child for whom a certificate has been issued will receive priority for admission to the nursery and kindergarten as well as for hospital treatment, and will also receive priority in getting a job. One-child couples will receive priority in urban housing, and this housing will be of a two-child standard. Rural couples will receive private plots and housing lots of a two-child standard. When retiring because of old age, officials and workers will receive an additional retirement benefit of five percent above what they would normally receive. If both husband and wife have been employed, each would receive this benefit. When rural peasants are unable to work because of old age, their standard of living must not be lower than the local average.

"If a couple has a second child after receiving the rewards and bonus, the bonuses and bonus workpoints awarded them must be returned together with their one-child certificate. If the single child of a couple dies or is seriously crippled after the couple has had a sterilization operation, a reverse operation may be carried out at the couple's request free of charge after verification by the couple's work unit. The wife and the parents-in-law of a man who has gone to live in his wife's family's home [when the wife's parents have no son] will receive treatment as lineal relatives of that man" (see *Foreign Broadcasting Information Service [FBIS]*, PRC, June 26, 1979, p. 2).

The trial measures adopted by other provinces are essentially variations on the same theme, that is, the use of economic incentives to encourage couples to have only one child and to sustain their motivation.

also in the process of drawing up a series of socioeconomic measures aimed at encouraging couples to have only one child. The first type of measure consists of a material reward, such as the provision of child health care fees, extra workpoints [for peasants in rural communes], extra pensions for the old and retired. A second type of measure is an institutional, guaranteed reward. In allocating jobs and housing in urban areas and private plots and housing lots in rural villages, priority will be given to couples who have only one child. As for those who insist on having several children in spite of patient attempts at persuasion and education, we will impose a multichild tax on them.[*] Imposing the multichild tax by itself is not our goal. Nor is it our goal to increase the burden borne by the masses. Quite the contrary. We intend to implement the law in order to firmly control population growth, thereby reducing the burden on the state, the collective and families. In fact, if every family commits itself to not having multiple births, there will be no problem of a multichild tax.

4. *Conscientiously train medical personnel, improve medical skills and vigorously manufacture and provide contraceptive supplies.* Henceforth, the foci of training should be the hospital at the county level and the health center at the commune level.[†] We must vigorously unearth methods of contraception from the treasure house of the traditional medicine of the fatherland, absorb and import advanced pharmaceutical and technical experiences from abroad, develop our own scientific and technological contraceptive research, strive to develop safe, highly effective, inexpensive and convenient contraceptives; smooth the supply channels so as to facilitate contraceptive use by the masses.[‡]

5. *Establish powerful and energetic planned-birth staff office units.* This is the organizational guarantee for controlling population growth. By no means may the planned-birth unit be regarded as dispensable. Nor may it be regarded as a temporary unit to be dismantled at a moment's notice. Quite the contrary, it must be further strengthened.

In striving to implement a population control program, one must overcome the erroneous tendency of laissez-faire on the one hand, and the lack of tact and neglect of motivational and educational activities, on the other. Birth planning, raising the first-parity rate and preventing third-parity births, are all aimed at protecting the health of women. We must, therefore, thoroughly implement the policy of "putting the stress on prevention." Even where we have broken through couples' psychological barriers [to planning births], and where people practice contraception voluntarily, we still have to strive to reduce the incidence of resort to remedial measures [i.e., abortion]. In order to vigorously extend and universalize the one-child family, it is necessary to manage maternal-and-child-health-care work well, thereby further reducing neonatal and infant mortality, so that when one baby is born, he or she will survive, and when a child is raised, he or she will mature into adulthood.

There are some who feel that population control, by implicitly emphasizing man as mouth [consumer] and not as hand [producer], tends to neglect the creative role of man as hand. . . . It is one-sided to stress the one at the expense of the other, and vice versa. In our previous critiques of the Malthusian theory of population, we one-sidedly stressed man's role as producer, even going so far as to assert that the more people the better, and that the more producers, the quicker, the better and the more economical would be socialist construction. In so doing, we neglected the other side, namely, that man, having a mouth, is also a consumer. . . . Where the level of production is relatively low, the aspect of man as consumer tends to be predominant; of the total material goods he produces, he consumes the bulk to support himself and his family, leaving little surplus for society. This is the condition characteristic of our country at the present time.

It takes more than 10 years, or even 20 years, for a newborn baby to mature into a producer capable of creating wealth for society. During this period, he is raised by the state, the collective and the family, and as such, is a consumer. Take our country: The vast population combined with a high rate of natural population growth increases the proportion of young people that are dependent. Therefore, without detailed analysis, it is unrealistic to say that the larger the population, the more the producers. All one can say is that the larger the population the more the *potential* producers. But in reality, there are more and more consumers, imposing greater and greater burdens on the state, the collective and the family. As Marxism tells us, the so-called producers of material goods are those who have certain productive experience and skills, and can use tools and machinery to produce material goods. When an infant grows up and reaches working age, he obviously cannot play the role of a modern producer unless he possesses modern scientific, technological knowledge, as well as the skill to operate modern equipment. On the other hand, without sufficient raw materials, without being equipped with sufficient advanced tools and machinery, he still can't fulfill his role as producer of material goods, he will still be dependent, and hence a consumer. Our population control efforts aim precisely at facilitating the accumulation of capital, enabling people to receive better education so as to use more and better tools, to have more abundant scientific and technological knowledge, and to possess more proficient skills, thus realizing fully the potential of people as producers . . . .

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[*] As of August 1979, at least five provinces (Anhui, Hunan, Shanghai, Beijing and Tianjian) had officially promulgated their own provincial trial economic sanctions against multiparity couples. In Hunan, the negative incentive measures were promulgated along with the incentive measures summarized above. "Economic sanctions are to be levied against couples of reproductive age, including remarried couples, who refuse to practice birth planning and produce many children. This also applies effective January 1, 1980, to officials and workers who have a third child, unless the third child is the result of the wife's having a multiple birth at her second confinement. The sanctions consist of deducting five percent from the husband's and the wife's monthly wages. Peasant couples who have a third child will have five percent of their total workpoints deducted. This will apply until the third child is 14 years old. A third child born after January 1, 1980, will not be eligible to participate in the worker's family medical scheme [the cooperative medical service covering the dependents of workers in urban areas who are not eligible for coverage under the state-funded program of free medical care that is limited to workers], in the rural cooperative medical scheme [manned by the barefoot doctors], or in labor protection medical treatment for lineal dependents [wives and children of workers employed by the state enterprise are eligible for medical care at state-operated or factory-run infirmaries at half cost]. The grain ration for a third child in urban and rural areas will be calculated according to the 'three-excess' grain price [a higher price than that obtained via ration] until the child is 14 years old. Officials and workers who enjoy medical treatment provided by a trade union or by the labor protection medical scheme and who have a third child will have to pay themselves for prenatal examination, drugs, midwifery and hospital expenses. No wage will be paid to the wife during her postnatal rest [eight weeks' maternity leave with full pay], which will be regarded as absence for personal reasons. If domestic difficulties occur because of this, no subsidies will be provided, nor will housing space be increased. Peasants will receive no extra housing lot or private plots..." (see *FBIS*, June 26, 1979, p. 2, cited in footnote† on p. 352).

In Anhui, officials and workers are taxed six percent of the combined income of husband and wife if they violate the two-child family norm. In Tianjian, the tax is 10 percent, and this high levy applies to peasants also—and is extended to unmarried women who have an out-of-wedlock child (until they reach the marriage age of 23–25). What is more, officials, workers and office employees who violate the norm are denied promotions for two years. In Beijing, the tax goes from 10 percent with the third child to 15 percent with the fourth child and 20 percent with the fifth child.

[†] As of 1979, China has trained and deployed a total of 1.4 million barefoot doctors who serve the rural population—a ratio of one barefoot doctor for every 530 rural residents. Eighty percent of the production brigades in rural villages have set up their own medical stations manned by the barefoot doctors and operated on a cooperative basis. In most cases, one female barefoot doctor in each station has been trained in contraceptive counseling and, in some cases, in performing induced abortion and IUD insertion. There are 2.46 million medical and health workers of various levels of competence, of whom 240,000 are traditional herbalist doctors, 250,000 are college-trained physicians and 420,000 are middle-level medical practitioners, similar to the Soviet *feldshers* (see "The PRC State Statistical Bureau's Communique Regarding the Results of Implementing the 1978 National Economic Plan," *Renmin Ribao*, June 26, 1979, p. 2).

[‡] All contraceptive supplies and services, including the "four planned-birth operations" (insertion and removal of the IUD, vasectomy, tubal ligation and induced abortion), are performed free of charge. Furthermore, there are benefits paid for the four operations according to the following schedule. In urban industrial sectors, two to three days' paid leave of absence for insertion and removal of an IUD, 10 days' paid leave for a tubal ligation, 14 days for an induced abortion, 66 days, of which 56 are maternity leave, for a postpartum tubal ligation. In the rural county of Taoyuan, in Hunan Province, the benefit schedule is as follows: seven days' worth of workpoints for insertion and removal of an IUD, 14 days' workpoints for an induced abortion, 21 days of workpoints for a tubal ligation, 30 days' workpoints for a postpartum tubal ligation. Since the amount of the benefit is decided upon in each locality, it varies from one rural county to another. I did not obtain any information on what benefits are paid for vasectomy in either urban communities or rural areas. (See Pi-chao Chen, "The Chinese Experience," *People*, Vol. 6, No. 2, 1979, p. 19.)

Some say that ours is a country with vast land areas and abundant resources, that the crux of the matter is that we have not expanded the production of material goods enough, and that a large population is not something to be afraid of. . . . This argument is erroneous. Development of production *is* the fundamental way to solve many problems, including employment, capital accumulation and improvement of the people's living standards. All of us are very familiar with this. But the outcome will be more favorable if we control the growth of population at the same time as we develop production. Controlling excessive population growth via a well-run planned-birth program will vastly reduce the population pressure on employment, facilitate the accumulation of capital on the part of the state and the collective, and improve the people's standard of living. . . .

Ours is indeed a country with vast land areas and abundant resources, a condition favorable to our pursuit of modernization. But it is necessary to conduct concrete analyses. Take the size of our land area. The land area of our country is roughly equal to that of the United States. But our arable land is only half that of the United States. Because of rapid population increase, the per capita arable land area has become smaller and smaller. The per capita arable land area was close to 3 mou [one mou = .152 acre] in 1949, at present it is 1.55 mou. If the population continues to increase rapidly and massively, the per capita arable land area will shrink further. Of course, we can reclaim some wasteland. But reclamation requires massive investment and takes time. Our primary approach is to raise the per-unit yield continuously and massively. Yet without advanced technology, vast quantities of chemical fertilizer, agricultural pharmaceuticals [e.g., pesticides] and scientific management, and large-scale comprehensive measures, it would be hard to imagine how we are to raise the per-unit yield continuously and massively. . . .

Thus, in view of the plenitude of people and the scarcity of arable land characteristic of our country, combined with our inability vastly to raise the per-unit yield in the short run, it is incorrect to claim that "a large population is not something to be afraid of." Of course, besides arable land, we have grassland, forest, aquatic resources, all of which can provide food. But in per capita terms, these resources of our country can't be said to be abundant.

Our country indeed has abundant resources. But the bulk remains to be developed, and therefore cannot be counted as materials for production and sustenance. Furthermore, their development requires capital and technological know-how. It takes more than a large population to develop them rapidly. For instance, there is petroleum in the coastal continental shelf. What is needed to exploit it is not more manpower, but rather capital and technological know-how. Here again is another problem underscoring the necessity of increasing capital accumulation. Therefore, given the reality of our country, it is correct to say we have "vast land areas and abundant resources." But it would be impractical to say that "a large population is not something to be afraid of."

Implementation of birth planning and control of population increase aim at facilitating the realization of the four modernizations, and raising the living standard of the people. These are the fundamental interests of the state and the whole people; they are also consistent with the interests of individuals. To the extent that the interests of individuals come into conflict with those of the state and the collective, the former should voluntarily be subordinated to the latter. As for all of us in positions of leadership at various levels, we have all the more responsibility to provide leadership by personal example. In educating the public about planned births, we must not only solve their psychological problems, but also do our utmost to solve their practical problems. At the present time, with respect to the attitudes and values of the masses, especially those of the peasantry, the old notions—such as "of the three kinds of unfilial behavior, childlessness is the worst," and don't call it quits until a boy baby comes along—persist stubbornly. But we have to realize that there are also practical problems, such as the absence of social insurance, subsidies and benefits in rural villages. With respect to these practical problems, it is necessary to take practical measures, and to solve them step by step. We must insist on the principle of equal pay for equal work regardless of sex; arrange for marriages in which the couple moves in with the wife's family whenever there is the need;[*] establish and manage well "respecting-the-old homes" for childless older people; and provide well for those older people who choose to stay in their own "five-guarantee" homes.[†] We must initiate pension systems in rural villages wherever conditions are ripe, ensuring that the living standards of old persons who are childless or have few children are slightly above average, so as to meet the problem of support for the old—and so on. Economic factors are among the most decisive. Once the economic problems are solved, the question of more vs. fewer children and of male vs. female offspring will be more than halfway solved.

In short, controlling the increase in population is a major task of strategic significance. Let us work together.

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[*] The official encouragement and arrangement of the groom-to-bride's-home settlement pattern whenever the bride's parents do not have a male child started in Tinghsien County, Hebei (Hopei) Province, in the early 1970s. Because of its outstanding success in arranging a large number of such matrilocal marriages, Tinghsien has been chosen as a national model and has been the site of several on-the-spot conferences to diffuse this pattern of marriage. The local leadership provides the key to success in Tinghsien. The local leaders make sure that neither set of relatives interfere with the bride and groom, that the production team to which the bride belongs does not discriminate against the groom with respect to job assignment, reward for labor, allocation of housing lots and private plots, and with respect to the children's admission to school or job assignment, they also see to it that the groom supports the bride's parents when they become old, and that he inherits their property.

[†] In rural areas I have visited, there exist two types of care for childless elderly persons. One is the institutional "respecting-the-old house," the other is the "five-guarantee household." Under the former arrangement, the childless elderly person moves out of his or her house (surrendering the property to the collective) and moves into the respecting-the-old house to be cared for and supported by the "public welfare fund" appropriated by the commune. Under the latter, the childless person stays in his or her own house and is cared for by relatives or neighbors, with the five basic needs (food, clothing, shelter, medical care and decent burial) provided by the collective.

Bringing down birthrates is difficult because more than half China's people are under 21

the difficulty of providing employment to labor.* Among the important factors responsible for the backwardness of our educational enterprise and for unemployment are our large population size and the rapid growth of population, especially the population of adolescents and youths.

Third, rapid increase in population is detrimental to the improvement of the people's standard of living. The degree to which the people's living standard can be improved is determined by the relationship between the growth rate of funds earmarked for consumption and that of population. In the 25-year period between 1953 and 1978, consumer income increased by 180 percent, an increase of no small magnitude. But the population increased by 66.7 percent. Consequently, per capita consumption increased by one-third. Fifty-eight percent of the annual increase in consumption funds had to be expended to meet the needs of the newly added population, leaving only 42 percent of the increase to improve the living standard of the base population. Take grain as an illustration. The grain output in 1977 was 565.5 billion jin (1 jin = 0.5 kg). Compared to the 1951 grain output of 287.4 billion jin, this represents an increase of 97 percent. However, the per capita availability of grain increased from 510 jin to 596 jin, an increase of only 86 jin, or [illegible]7.3 percent. At the present time, the textile market remains tight, the output generated by the textile industry is not able to satisfy the demand of the people. In our large country, with over 900 million persons, even a small rise in each individual's demand will produce a shockingly large aggregate figure, exerting great pressures on the textile industry. The current market tension reflects not only insufficient output but also population pressure.

From the above analysis, we can see the preeminent significance of controlling population increase for the promotion of the four modernizations.

Our policy is to proceed from actual conditions in our country and to control population increase for a long time in a conscientious and planned manner. We must insist on implementing this policy, and strive to reduce the natural increase rate of population to zero—that is, to achieve zero population growth by the end of this century.

To reach this goal, we envision a two-stage campaign. First, we will strive to reduce the natural increase rate from the present 12 per 1,000 to about five per 1,000 by 1985. Then, we will strive to lower the natural increase rate to zero by the year 2000. In our effort to realize our targets, we encounter considerable difficulties, and the tasks are arduous. Firstly, our country's crude birthrate has already declined from 40 per 1,000 to 18.34 per 1,000 [in 1978]. To further reduce the crude birthrate substantially is comparatively difficult, in view of the large reduction that we have already effected. Secondly, at the present time, persons below 21 years of age account for half of the population. These people will reach the age of marriage and reproduction, successively, by the end of this century. Particularly, as the larger cohorts born in 1963, 1964 and two years in the late 1960s reach the age of marriage and reproduction, fertility will probably peak again. Thirdly, people living in rural areas account for over 80 percent of our country's total population. Generally speaking, the task of controlling population increase in rural villages is much more difficult than in cities.

But we have many favorable conditions. Since 1971, our work has resulted in lowering the natural population increase rate from 23.40 per 1,000 in 1971 to 12.05 per 1,000 in 1978. A decline of such magnitude in a few years is indeed rare in the history of the world. It shows that controlling population increase is consistent with the fundamental interests of the broad masses of people, and has had their support.

In order to bring the natural increase rate down to around five per 1,000 by 1985, we must first reduce and then altogether eliminate the phenomenon of multiparity rates [the percentage of all births that are of third and higher parities], and promote the practice of couples' limiting themselves to only one child. At the present time, third and higher parity births account for about 30 percent of total births. Herein lies the potential for further lowering the crude birthrate, and controlling the natural increase rate. Assuming a multiparity rate of 30 percent, births of third and higher parity probably amount to about 5.2 million of the 17.4 million births in 1978. If we halve the multiparity rate, we will reduce total births by 2.6 million, thereby lowering the natural increase rate from 12.05 per 1,000 to 9.40 per 1,000. Let us strive to prevent virtually all third-parity births by 1985. If we succeed, there will be five million fewer births per year than there are now, the crude birthrate will decline [from 18] to about 13 per 1,000, and the natural increase

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*According to the same two demographers, "At present, there are more than 10 million persons entering the labor market" (see Liu Cheng and Wu Chungping, 1979, op cit., p. 3). According to another source, "This year [1979], there are over seven million people in the urban districts seeking employment. Between 1980 and 1985, there will be 18 million senior and middle school graduates in cities and towns alone, an average of 3.1 million annually" (see "Urban Collective Economy: Develop It or Eliminate It?" *Beijing Review*, No. 35, Aug. 31, 1979, p. 11). Recent months have witnessed a much more open discussion of the magnitude of unemployment and of practical ways to alleviate it. The article cited above is one such example. Another, by Xue Muqiao, an adviser to the State Planning Commission and formerly the director of the State Statistical Bureau, is entitled "Noted Economist on Employment" and appears in *Beijing Review*, No. 33, Aug. 17, 1979, pp. 13–15. The consensus of the authors is that it is beyond the state's capacity to provide the financial investment required to create jobs for the young people entering the labor market. They call on the collective units and urban neighborhoods to pool their own resources to organize service and industrial cooperatives so as to employ their own young people. As an expedient approach to the solution of unemployment, the government encourages urban workers, especially women, to retire at age 50, thereby allowing their child who was originally "rusticated" assigned to a rural area upon graduation to "replace" them on the job. I ran into a few such cases while visiting urban residential compounds in Shanghai and Peking.

China's Birth-Planning Program

Pi-chao Chen

Over the years Chinese population policy has gradually become more specific and detailed. As early as 1957, the late Chairman Mao (Mao Zedong, no date) in a major speech called for immediate transition to zero population growth. His statement was not publicized, however, and no concrete steps were taken at that time. In the early 1960s Premier Chou En-lai reportedly remarked that he would be most pleased if natural increase could be reduced to 10 per 1,000 by the end of this century (Liu Zo-qing 1978). In 1970 or 1971, the State Council issued an internal policy directive (State Council Directive No. 51) calling for "outstanding results" in planning births by 1975 but refraining from setting a specific target. By 1972 and 1973, Chinese birth planning administrators were reporting that they had been exhorted to reduce the rate of natural increase to 10 per 1,000 in the cities and 15 per 1,000 in the countryside as soon as possible, preferably by 1975 (Pi-chao Chen, no date, b). More recent policy calls for the reduction of the natural increase rate to 5 per 1,000 by 1985, and to zero growth by 2,000.

The program the Chinese have designed to achieve such reductions is complex and detailed. It involves official norms about desirable childbearing patterns, procedures for setting and enforcing fertility targets at different levels of government, a multitier system for delivering contraceptive services, and measures for the promotion of specific birth-planning methods. Each of these elements is discussed in this paper.

NOTE: An earlier version of this paper was presented at the China Population Analysis Conference at the East-West Population Institute in May 1980. In addition, this paper describes policies and practices in effect prior to the new "one-child family" policy described in the article by Chen Muhua in this volume.

THREE REPRODUCTIVE NORMS

In their birth-planning policy, the Chinese attempt to combine "state guidance" with voluntarism. They believe that the government should rely on patient education and persuasion and refrain from coercion, but that couples must on their part voluntarily cooperate to limit births. If couples do not cooperate, the official position is that they have no right to reproduce in an "anarchical" manner and will be prevented from doing so.

The government has spelled out three reproductive norms for all eligible individuals: late marriage, long spacing between births, and few children (wan xi shao in Chinese, meaning "later, longer, fewer"). In cities, men are not to marry until they are 26 years of age, women not until 24. In rural areas, the minimum ages are 25 for men and 23 for women. The interval between the first and second child should be at least four years. "Few" children originally meant two in the city and three in the countryside. In 1977 the number was changed to two children everywhere, and, beginning in 1979, couples were encouraged to have only one child.

Exceptions to these norms may be made for compelling reasons. An underage man who has young siblings to care for may take a wife. An underage woman whose fiancee is leaving home for military service may get married. A woman with a child under 3 may obtain authorization to become pregnant if her husband is about to leave on an official assignment that will take many years. Couples with two daughters and couples with one daughter and a congenitally crippled son may have a third child. Compliance with the norms is monitored, but by itself would not necessarily lead to desirable growth patterns. The Chinese add a set of demographic targets, attempting to control population in the same way they control the production of goods and services.

TARGET SETTING

In the mid-1970s, the State Council birth planning staff began to set targets for reducing rates of natural increase for each province. In 1978, a natural increase rate of 10 per 1,000 was set as a target for most coastal provinces. The three largest municipalities had an even lower target. For Qinghai Province, however, with its low level of socioeconomic development and substantial Moslem population, a target rate of 19.4 or 20 per 1,000 was set.

Given its target, each province is supposed to allocate a birth quota to each of its prefectures. Each prefecture in turn distributes birth quotas among its urban municipalities and rural counties, each of which then works out an annual plan of births.

In the urban municipality of Changsha, for instance, the annual plan of births has to be prepared at least 9 months ahead. The plan takes into account the number of recent and expected marriages (which must be reported by couples as much as a year in advance). Couples are eligible for a birth quota the year after their marriage, the quota remaining valid until their first child is born. The Changsha Municipal Birth Planning Staff Office has discovered that 20 percent of recently married couples will have a child in the first year, 60 percent the following year, and the remaining 20 percent in the third year. Discovery of this pattern facilitates the drawing up of a realistic annual plan of births. The planners must also take account of second births and, where targets do not match expectations, may have to make difficult choices.

COMMUNITY PLANNING OF BIRTHS[1]

These hard choices can be seen most dramatically at the next lower level, the level of brigades (and their constituent teams) or communes. The brigade birth-planning leadership group (headed by the brigade captain or by the local head of the women's federation) allocates its birth quota among its teams, each of which has an average of 20 to 40 households. The team birth-planning leadership group then calls all the eligible couples, including those who plan to marry soon, to a meeting. All the couples submit their individual birth plans, indicating when they prefer to have their first and second children. The participants as a group approve or revise each individual plan. If a couple's plan conforms to the three reproductive norms, it is usually approved without question; if it does not, it may be revised. If the total births proposed exceed the number permitted by the brigade, however, further discussion takes place. First priority is given to childless couples and couples who are marrying late, and second priority to couples with one child aged three or older. If this does not resolve the problem, the birth quotas are assigned to couples recommended by the "masses," i.e., the brigade population, and the other eligible couples must wait until the following year.

Periodic adjustments to the plan are made during the year in meetings of the eligible couples. A couple who did not receive a quota but nevertheless conceived a child may request a birth quota. If another couple, who had been assigned a quota, failed to conceive, the request may be granted. Adjustments may also be made for the death of an infant or a husband's impending departure.

Such a decision-making pattern is followed in many communes and urban neighborhoods; other patterns also exist, however. In some places where the birth-planning campaign is well established, meetings are dispensed with, and the local birth-planning leadership group prepares the community plan from plans submitted by all affected couples.

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[1] The information presented in this section draws heavily on interviews conducted by the author with birth-planning administrators and cadres in various parts of China in June 1978, while travelling with the Rural Health Systems delegation of the Committee on Scholarly Communication with the People's Republic of China (see Pi-chao Chen, no date, a).

If the birth plan submitted by a couple does not conform to the three reproductive norms, the local birth-planning leadership will ask the couple to modify their plan to conform to the three norms. Or it may call meetings of all eligible couples to discuss the case. Because the birth quota is fixed, and often the number of couples eligible for a birth quota exceeds the number available, one couple's refusal to abide by the norms means that another eligible couple has to sacrifice its quota.

Peer pressure is used to make couples abide by the birth plans. Recalcitrant couples may be subject to "thought work," persuasive visits from the local birth-planning leadership group. Since the government lowers the target for natural increase each year, an increasing number of eligible couples must forfeit their birth quota. This process of collective decision making is designed to make the sacrifice more palatable.

There are some reports of coercive measures being taken in some areas to prevent births. At a forum of legal workers in January 1979, one participant reported that, in some localities, "militia propaganda teams" not only promoted birth planning in reluctant households but also sought to "exercise control over their food, drinking water, and workpoints" (Foreign Broadcast Information Service, Jan. 4, 1979, p. E7). The newspaper Renmin Ribao (People's Daily, Sept. 15, 1978) has complained that a family's food rations have been reduced if the wife failed to accept an IUD, if the family did not raise pigs, if it failed to deliver the required number of eggs, or if a family member failed to attend a meeting. Overseas Chinese sources claim that pregnant women have run away from their communities in order to avoid being sterilized (Wang Yi-ping 1980). Government leaders have been aware of the use of coercion or "mobilization" in planned birth work and have repeatedly spoken out against it and forbidden it. Under great pressure to show results or continued progress, however, the local cadres have continued to resort to coercion in order to fulfill their "targets"--a practice that is likely to continue as long as the pressure from above remains strong.

CONTRACEPTIVE SERVICES

Couples are aided in avoiding births, should they not be assigned quotas, by the contraceptive delivery system. Run by the same groups that set demographic targets, this system involves committee or leadership groups at each organizational level. These committees always include formal community leaders and representatives of important constituencies. At the commune level, for instance, the commune birth-planning committee is headed by the first secretary of the Chinese Communist Party and consists of representatives from the party committee, the commune management committee, the police, the women's federation, the young Communist league, the militia, the school system, the commune health center, and so on. This committee supervises one or two full-time birth-planning cadres. The brigade birth-planning leadership group, by comparison, is headed by the captain of the brigade or by the chair of the local chapter of the women's federation. It supervises the local barefoot doctors, part-time maternal and child health workers or trained attendants, and health aides for each team. All these birth-planning workers are recruited locally; if an outsider is assigned, he or she is expected to move into the community.

Assisted by a part-time birth attendant, a maternal and child health worker, or health aides for each team, a female barefoot doctor is responsible for delivering babies; providing prenatal and postpartum counseling and contraceptive education; delivering contraceptive supplies; referring to health clinics clients with childbirth complications or those who wish a planned-birth operation; and keeping birth records. It is official policy that at least one barefoot doctor in each brigade is female.

Women may obtain contraceptive supplies and services at neighborhood clinics or at clinics at their work places. Most women, however, can have supplies delivered to them at work or at home by part-time birth-planning workers. The workers also set up appointments and accompany women to the clinic or hospital for surgical procedures like IUD insertion or removal, tubal ligation, and induced abortion. These contraceptive supplies and services have been provided free since the early 1970s. The health units receive supplies without charge and are reimbursed on a fixed scale for surgical operations.

Numerous training programs have been organized to provide the army of health personnel required by the contraceptive delivery system. Provincial governments have been responsible for training, but the less developed provinces have received technical assistance from the major eastern-coast cities. The success of these programs may be illustrated by Guangdong Province. By 1979, Guangdong had more than 2,000 medical personnel running training programs and providing technical support for local-level birth-planning centers. There were over 50,000 female barefoot doctors trained in insertion and removal of the IUD. Most of the commune health centers could perform the four planned-birth surgical procedures.

PROMOTION OF SPECIFIC BIRTH-PLANNING METHODS

Planned-Birth Operations

In 1970, at the same time that free contraceptive services for all eligible couples were introduced, the government mandated a uniform schedule of benefits for women employed in government agencies and state enterprises who seek a planned-birth operation. For induced abortion, a 14-day leave of absence was to be granted with full pay; for tubal ligation, 10 days off with full pay; for insertion or removal of an IUD, 2-3 days off with full pay; and for postpartum tubal ligation, 7 days off with full pay, in addition to 56 days of fully paid maternity leave. Paid maternity leave for government workers had first been instituted by the 1953 Labor Insurance Regulations, and paid leave for induced abortion by a decree in October 1957.

For other women, the extent of benefits is decided locally. The government has called on collective units to provide benefits, but has also set requirements. Table 1 illustrates some of the resulting variation. Since peasants do not receive a fixed wage but rather earn work points, the benefit days represent the days a woman can be absent without losing points.

IUDs

According to an official from the State Council Birth-Planning Leadership Group, IUDs account for 50 percent of all methods used throughout the country. This observation is consistent with the service statistics obtained by the Rural Health Systems delegation of the Committee on Scholarly Communication With the People's Republic of China that toured many parts of China, including some remote rural counties, in summer 1978 (see Table 2). The IUD was the most popular method in all areas visited, accounting for between 41 percent (in Xinhui County, Guangdong Province) and 87 percent of all contraceptives used (in Hengxien County, Guangxi Chuang Autonomous Region). Sixty percent of all contraceptors in Guangdong Province were using the IUD in 1977.

Sterilization

Sterilization has been further promoted by the assignment of sterilization quotas to provinces and to smaller units. Couples with more than three children, at least two of whom are sons, with the youngest son at least four years old, are prime targets for sterilization. There appears to be some competition to meet or overfulfill quotas in certain areas, as reflected by a Guizhou provincial broadcasting report that by September 1978 the Tungjen prefecture had overfulfilled its sterilization operation quota by 10 percent (Foreign Broadcast Information Service, Sept. 26, 1979, p. P2-P3).

Sterilization is having some success; tubal ligation and vasectomies rank just behind IUDs in popularity. In 1977, tubal ligation accounted for 39 percent of all birth control practice in Taoyuan County, Hunan Province, 32 percent of practice in Xinhui County, Guangdong Province, and 20 percent of practice in all of Guangdong Province. This method is extremely limited in other places, like Hengxien County, where local doctors and health workers may not yet have received training in this procedure.

Vasectomies account for 10 percent of all methods used in Guangdong Province, and are second to IUDs in popularity in Sichuan Province. But

TABLE 1 Benefits for Planned-Birth Operations: Leaves of Absence Granted Without Lost Workpoints in Selected Areas

Operation	Taoyuan, Hunan	Luentsun commune Xian, Shaanxi	Nanning Guanxi
Induced abortion	14 days	14 days	14 days
Tubal ligation	21 days	7-14 days	10 days
Postpartum tubal ligation	30 days	60 days	63 days[a]
IUD insertion	7 days	7 days	3 days
IUD removal	7 days	n.a.	2 days

[a] Includes 56 days of maternity leave for government workers.

TABLE 2 Proportionate Distribution of Contraceptive Methods Used in Selected Areas in China, 1977

	IUD	Tubal Ligation	Vasectomy	Oral pills (percent)	Condoms and diaphragms	Injectable	Others	Total
China	50	u	u	u	u	u	u	u
Provinces								
Guangdong	60	20	10	5[a]	5	0	0	100
Jiangsu	52	32	7	7	u	u	0	u
Shanghai[b]	25	40	7	7	u	u	u	u
Tianjin	36.6	16.3	0	25.8	14.7	.6	5.8	.99.8
City Proper	16.2	20.6	0	31.6	22.7	.6	8.2	99.9
Periurban Districts	37	17.2	0	28.0	11.3[c]	.5	5.7	99.7
Periurban Counties	67.7	9.3	0	15.3	4.9[c]	.7	2.2	100.1
Municipalities								
Xian	39	14	2	22	24	0	0	101
Chengdu	30	14	31	8[d]	10[d]	4	4	101
Rural Counties								
Xinhui	41	32	20	0	7	0	0	100
Hengxien	87	4	1	5	u	u	u	u
Taoyuan	40	39	13	7	2	0	0	101

u = unknown.

[a] Including injectables.

[b] Average for the entire municipality, including the 10 periurban counties, for 1978.

[c] These are "vaginal methods."

[d] The oral pill and condoms and diaphragms together account for 18 percent.

Sources: Chengdu: Leslie Corsa's trip notes, November 1978.
Tianjin: Katherine Ch'iu Lyle, "Planned Birth in Tianjin," in The China Quarterly, no. 83, September 1980, p. 558. All others: Pi-chao Chen's trip notes. Data from the local birth-planning administrators in the places visited.

vasectomies were extremely unpopular in most places visited by the Rural Health Systems delegation, and acceptance rates are reported to be very low in the nation as a whole. Their popularity in Sichuan may be due to the fact that, in the early 1970s, a Chungqing physician, Li Shungchiang, devised a procedure for vasectomy by injection, which has been vigorously promoted by birth-planning officials. A national conference on contraceptive technology in January 1980 called for wider promotion of that method.

Oral Contraceptives

Oral contraceptives are available at best on a limited scale in rural areas. Only in major cities does the pill account for more than 10 percent of contraceptive use. In Shanghai 19 and 17 percent of contraceptors were using the pill in 1971 and 1978, respectively; in Xian the proportion was 22 percent in 1977. In Guangdong, the largest administrative unit for which the NAS delegation had detailed service statistics, the pill together with injectables accounted for 5 percent of all methods used. There was an unusually high rate of oral contraceptive use in the remote rural county of Taoyuan, in Hunan Province. However, Taoyuan was one of several experimental counties in Hunan where the pill was introduced in the early 1970s to determine its acceptability and long-term effects.

Induced Abortion

Induced abortion was legalized in 1956, and shortly thereafter the necessary social conditions for induced abortion to be performed were liberalized. Induced abortion is now readily available, free, and granted to a woman upon request, with or without her husband's consent. Some female barefoot doctors in remote brigades have been trained in the vacuum-aspiration procedure for terminating early pregnancy. For the termination of pregnancy after the first trimester, patients are referred to commune health centers or the county hospital. The official position on induced abortion is that it is safe but should be a last recourse, in the event of contraceptive failure.

The incidence of induced abortion in the areas for which data are available is roughly the same as in the United States in recent years (Table 3). In 1978, a quarter of a million induced abortions were performed in Guangdong Province, about 244 induced abortions per 1,000 live births. The comparable figure for Xinhui County was 285, and for Taoyuan, 280. The equivalent rate in the United States in 1975 was 273.

The incidence of induced abortion has been considerably higher in China's major cities. The number of induced abortions per 1,000 live births in 1977 was 1,213 in Xian municipality, 818 in Changsha, and 1,200 in Chengdu, two to three times higher than in rural counties.

TABLE 3 Induced Abortions per 1,000 Live Births in Selected Areas in China, 1977 and 1978

Area	Year	Induced abortions per 1,000 live births
Province		
Guangdong	1978	227
Tianjin	1978	651
Municipality		
Nanjing	1977	about 333
Xian	1977	1,213[a]
Changsha	1977	815
Chengdu	1977	about 1,200
County		
Xinhui (in Guandong Province)		288
Taoyuan (in Hunan Province)		279

[a] In 1977, there was a total of 49,816 induced abortions, 1,754 of which were mid-term abortions.

Sources: Nanjing: "Second Birth-Planning Delegation Trip Notes, November 1978"
Chengdu: "Leslie Corsa's Trip Notes, November, 1978"
Tianjin: Katherine Ch'iu Lyle, "Planned Birth in Tianjin," in China Quarterly no. 83, September 1980, p. 558.
All others: Obtained by Pi-Chao Chen from the local birth-planning administrators in the places visited.

Birth-planning administrators believe that people who live in cities are more strongly motivated to limit their family size and are readier to resort to induced abortion, but also that many urban abortions are cases referred from the countryside. Rural women expect safer care in city hospitals. They also often combine a trip to the city for an abortion with a visit to relatives or friends, for which they would otherwise require special permission. For this reason, the statistics on induced abortion in the major cities may give a misleading picture. It may be inaccurate to suggest, as some visitors to China have done, that China--like Hungary, Czechoslovakia, and Japan--has relied extensively on induced abortion to control fertility.

SOME RESULTS OF THE PROGRAM

The government uses three rates--the late marriage rate, the birth limitation rate, and the planned-birth rate--to measure the success of its program. Some available statistics on these rates are given in Table 4.

Vice-premier Chen Muhua has stated (1979) that there were 17.4 million births in China in 1978, of which 30 percent were third- and higher-order births. Since such births are outside the plan and should not have taken place, at least 5.2 million couples deviated from the reproductive norms.

The amount of deviation can be illustrated further in Guangdong Province. Guangdong had 6.2 million fecund married women of reproductive age (MWRA) in 1978. Initially 620,000 birth quotas were allocated to the province, enough for 10 percent of these women to have a child. In response to requests from local units, the quota was raised to 930,000 births. As it turned out, in 1978 there were 1.1 million births in Guangdong, yielding a natural increase rate of 14.75 per 1,000. The province failed to reduce its natural increase to 10 per 1,000 as required by the State Council Birth Planning Office; its natural increase rate for 1978 in fact exceeded that for 1977. Furthermore, of the 1.1 million births in 1978, 40 percent were third- or higher-order births.

The late marriage rate for Guangdong in 1977-1978 was 75 percent, which means that 25 percent of the couples married that year did so before reaching the required age. The birth limitation rate for 1978 was 70 percent, meaning that 30 percent of the married fecund women of reproductive age did not practice contraception. Only half or fewer of this 30 percent had been granted permission to bear a child.

Similar shortcomings were shown in Taoyuan County in Hunan Province. The county was given a target of 12,000 births for 1977, 2,000 above the total requests from the county's 60 communes, in order to "make things easier for the lower levels." In spite of the generous target, the communes failed to stay within the quota, exceeding it by 1,586. Taoyuan achieved a planned-birth rate of 70 percent in 1977; thus 30 percent of the women who gave birth that year did not conform to one of the three

TABLE 4 Nuptiality and Fertility Measures for Selected Areas, 1977

	Late marriage rate (%)	Birth limitation rate (%)	Planned birth rate (%)	Crude birth rate (per 1,000)	Population	Married women in reproduction ages (%)
Province						
Guandong	75%	76%	61%	18.6%	55,000,000	11.6%
Jiangsu[A]	88.5	83.7	60.8	15.99*	56,000,000	
Hebei	93	83	77	15		
Shanghai					12,000,000	
City Proper	90	85	85	7.4		11.7
Periurban counties	80	80	75	15.3		
Tianjian	95.2	80.6	69.7	15.4	7,210,898	11.6
Rural county						
Xinghui (Guangdong)	95.85	78.9	62	15.5	830,000	11.9
Hengxien (Guangxi)	97.7	70.1	n.a.	20.2	780,000	11.2
Taoyuan (Hunan)	NA	80.2	70	15.3	889,845	12.0
Municipality						
Changsha (Hunan)	97	81.7	70.9	12.61	700,000	13.0
Xian (Shaanxi)	94.4	82	67	15.88	2,633,805	14.6

reproductive norms. As a result, the crude birth rate for the county in 1977 was 15.3 per 1,000.

The Chinese government has claimed that, between 1971 and 1978, 170 million Chinese men and women practiced birth control, including sterilization. Government also claimed that 54.6 million births were averted as a result (Meizhou Huachao Daily, N.Y., Jan. 29, 1980, p.1; see also Jian Kang Bao, Jan. 27, 1980, p. 1). No good national statistics are available for evaluating such claims. If such claims are correct, however, the Chinese birth-planning program, despite its falling short of its own goals, has shown remarkable success.

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Part 4
Research on Marriage and Family

Marriage and Changes in the Family in the People's Republic of China

William L. Parish

To most scholars in the West, the reality of life in China still remains elusive. Old models depict a bureaucratic state controlled firmly from above and a populace ideologically mobilized through group criticism and self-criticism. In the face of events of the past four years, however, these models have become quite inadequate. China may still be a highly bureaucratized state, and two decades of ideological mobilization must have left some impact, but our models have always been too simplistic--even before recent political changes. They assume a uniformity of living conditions that does not exist in China, just as it does not exist in the West. The contrasting marriage and family practices of Chinese cities and villages are good illustrations of this absence of uniformity, and the importance of considering actual living conditions in understanding social change in China.

This essay summarizes findings from a 1973-1974 study of 63 villages of Guangdong Province in south China and preliminary impressions from a 1977-1978 study of 133 urban neighborhoods throughout China. Both studies use methods of anthropology-at-a-distance. Refugees and legal emigres living in Hong Kong were asked to describe life in their community and among their neighbors back in the village or city in which they lived before leaving China. The accuracy of their answers is evaluated by probing for concrete details, by controlling for the background characteristics of informants, and by comparing our sample results with official radio reports. The answers of those who admit past political errors and negative class origins are no different from the answers of others. Respondents' answers on six dimensions--including grain yields, proportions of villages with cooperative medical programs, and number of barefoot doctors per village--give figures virtually identical to official results in 1973 (Parish and Whyte 1978). Comparisons of the proportions of the nonagricultural force in state and collective employment, plus the incomes in each sector, suggest that the urban interview information closely replicates official figures.

VILLAGES

Since 1949, the Chinese government has promoted fundamental changes in Chinese rural society. At the level of village institutions, change appears to have been massive, although, paradoxically, change in family practices has been far more equivocal. In the mid-1950s, villages switched rapidly and, compared with the Soviet Union, relatively painlessly, to collective farming (Bernstein 1967). Since the 1950s, widespread communication and education facilities have increased the possibilities of change. Ninety-three percent of all production teams (a village unit of 30 to 40 households) have wired broadcast networks, linking them to the rest of the country (Peking Review 1975 (17)45:30). As a result of emphasis on village as well as state-run schools and adult literacy programs, 70 percent of all rural adults have become literate--a figure matched by only a few other societies at China's level of development (Beijing Review 1980 (5):8; see also UNESCO Statistical Yearbook). Medical programs have been revamped: 62 percent of China's 1.9 million hospital beds are in the countryside, 80 percent of all production brigades (village units of not quite 300 households each) have cooperative medical insurance programs, and almost 1.6 million barefoot doctors provide first-line medical care to villagers (Beijing Review 1980 (25):20; Lampton 1979). In south China, the labor contribution of women who have gone to work in the fields has increased from less than one-fifth in 1930 to almost half of all labor today (Parish and Whyte 1978; Schran 1969). These are all signs of a massive transformation of many of China's rural institutions.

In family matters, however, the degree of transformation has not been nearly so great nor so consistently in the direction of government ideals, which have long stressed generational as well as female equality. Families were to be stable, with mutual concern and care between generations, yet parents were no longer to dominate the lives of their children. Growing children were to be guided by persuasion rather than obedience to parental authority. Grown children were to make their own decisions about marriage partners and other life choices, with the interests of the larger society taking priority over narrow family interests. Women were to acquire more power both inside and outside the home, sharing with men equal access to jobs, pay, office, inheritance, and help about the house. Weddings, funerals, and rituals symbolizing the authority of elders and the inferiority of women who entered the family from outside were to be simplified and replaced by new national holidays celebrating the greater society over the family (see Meijer 1971). To these ideals, institutionalized in the marriage law of 1950, has been added the more recent attempt to raise marriage ages and reduce the birth rate. In rural areas, this attempt has taken on increased seriousness since the early 1970s.

According to our study of 63 Guangdong villages, parental control had weakened by the early 1970s. Although parents and aunts often provided the initial introduction to potential marriage partners, children had a veto power over the final choice and some opportunity to get better acquainted before the marriage ceremony (see Tables 1 and 2). New brides were less subservient to their in-laws than in the past. Sons had more power vis-a-vis their fathers, often assuming the leadership of the family once their father retired from active field work. Nevertheless, the potential for parental control was still very much present. Typically, parents and grown children were not dispersed but resided in the same compound, and parents shared meals with one son while caring for all their sons' children (see Table 3). Parents and grandparents still emphasized obedience in child training rather than independence training, maintaining family loyalty as a significant component. Schools were not a threat to this type of training, for they, too, tended to emphasize basic skills of reading, writing, and arithmetic plus obedience to elders.

The position of women was more equitable than in the past. Footbinding, marriage of child brides, and concubinage had been eliminated. Almost as many women were literate as men--about 60 percent of adult women and 80 percent of adult men. However, daughters were more likely than sons to be taken out of school to tend younger siblings. Bride prices remained high, and daughters inherited neither money nor property. In cases of divorce or death and remarriage, women could not make the claims to property and child custody that official policy proclaimed. Some village officers refused to approve a divorce until the bride price, which is not supposed to exist, had been returned to the groom's family. Positions of village leadership were restricted largely to those women's vice-chief positions mandated by the central government. Representation in full chief and functionary positions, such as accountant and warehouse keeper, were minimal (see Table 4).

The variability in response to government appeals for social change was also evident in the realm of ritual. There had indeed been a general retreat from professionally led community and lineage rituals to those centering around family life. Temples and religious specialists became inactive in the 1950s. Lineage halls were stripped of their ancestral plaques and converted to other uses in successive campaigns, culminating in a complete elimination of their activities during the 1966 Cultural Revolution. In contrast, however, family rituals connected with birth, marriage, and death, while simplified in form, continued very much in a traditional pattern. Many families continued to revere their ancestors, maintaining domestic plaques--red strips of paper inscribed with the proper names--or pictures placed in the main family hall. Weddings continued to be highly elaborate, with many guests and multiple tables laden with food. New political rituals, such as National Liberation Day or International Women's Day, were pale images of the community rituals they were designed to replace, while annual festival celebrations in the home continued to be vigorously attended. Collectivization, then, narrowed the circle of ritual celebration but neither eliminated its traditional content nor diverted it to political paths.

The birth-planning campaign was more uniformly successful. Visitors had been told that the 1972 crude birth rate in Guangdong Province was 26 per 1,000, down sharply from the 37 or 38 per 1,000 of a decade before. Although there was probably some underregistration of births, interviews confirmed that the rate had declined sharply and was probably approaching

TABLE 1 Change Over Time in Type of Introducers Used in Mate Choice

	1950-1958	1959-1967	1968-1974
None	14%	31%	23%
Relative	29	35	33
Friend or acquaintance	14	8	24
Matchmaker	43	27	21
(N)	(7)	(26)	(92)

Source: Village Marriage Sample, 1973.

TABLE 2 Dominance in Mate Choice Over Time

	Pre-1949	1950-1958	1959-1967	1968-1974
Parents	100%	83%	41%	38%
Young couple	0%	17%	59%	62%
(N)	(6)	(6)	(17)	(52)

Source: Village Neighbor Sample, 1973

TABLE 3 Family Structure

	Rural South China, 1930	Rural Kwangtung, 1973	Urban Lingnan, ca. 1975
Average Number of members	5.0	4.8	4.4
Structure of family			
Single person	3%	12%	5%
Nuclear	34	50	67
Stem	--	37	22
Joint	63[a]	2	2
Other	--	--	3
Total	100%	101%	99%
Total N	(2,422)	(131)	

[a] Stem and joint structures combined.

Sources: Lewis, S. C. Smythe, "The Composition of the Chinese Family," Chin-ling hsueh-pao (Nanking Journal), vol. 5, no. 1 (1935), table 6. Rural Neighbor Sample, 1973. Weighted Urban Neighbor Sample, 1972-78.

TABLE 4 Village Officers by Sex and Age

	Brigade Officers			Team Officers			Adult
	Top Leaders	Women's	Lower Functionaries	Top Leaders	Women's	Lower Functionaries	Popu-lation
Sex							
Male	37	0	43	61	0	72	277
Female	1	14	2	1	14	3	289
Total	38	14	45	62	14	75	566

Notes: (a) Top brigade leaders include 15 Party secretaries, 10 brigade chiefs, and 13 vice-chiefs and sideline industry heads. The women's officer is the person in charge of women's affairs. The lower brigade functionaries include 17 militia leaders and security officers, 11 financial officers, 4 clerks (wen-shu), and 15 miscellaneous other personnel. (b) The top team leaders include 36 team chiefs and 22 vice-chiefs. The women's officer is simply the women's vice-chief. The lower team functionaries include 10 militia leaders and security officers, 20 accountants, 9 cashiers, 19 custodians, 3 financial officers and 16 point recorders. (c) The number of officers with complete data is shown in parentheses following each series of percentages. (d) Two of the lower team officers, a militia chief and a point recorder, are below age 20.

Sources: Last column is from census of neighbors. Other columns from cadre sample, 1973.

the reported figure. There were some stories of husbands who insisted on a sixth, seventh, or eighth birth when all earlier births were daughters, pointing to some continuation of traditional patterns and potential difficulties in attempting to further reduce the birth rate. The attempt to raise the age at marriage was at best only moderately successful. After a sharp upturn in the 1950s, the average age at marriage of men was at about the desired rural minimum of 25 for men in the early 1970s, while the average age at marriage for women was two years below the desired rural minimum of 23 for women (see Table 5).

Although interviews with emigres provide the richest, and some of the most systematic, data on these issues, these conclusions do not rest on interviews alone, nor must they be restricted to behavior in the early 1970s. Visitors to villages in the 1960s and early 1970s observed similar practices (e.g., Myrdal 1965; Chen 1973; Parish 1975). Articles in the Chinese press also suggest the prevalence of some of these practices.[1] Letters to the editor of the magazines China's Woman and China's Youth (both in Chinese) have long been a rich source of information on local social practices that fall short of government ideals. In the March 1980 issue of China's Woman, for instance, there are letters complaining of a woman's being threatened with divorce unless she has a son in addition to the two daughters to whom she has already given birth, and the family of a prospective bride demanding 900 yuan and

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[1] An article by Soong Ching-ling (Madame Sun Yat-sen, 1972, p. 7) is often quoted:

> Today in our country there are people's communes in rural places where women receive less pay than men for equal work in production. In certain villages patriarchal ideas still have their effect. Proportionately more boys than girls attend school. Parents need the girls to do household work. Some even feel that girls will eventually enter another family and therefore it would not pay to send them to school. Moreover, when girls are to be married, their parents often ask for a certain amount of money or various articles from the family of the would-be husband. Thus, the freedom of marriage is affected. Finally, as farmers want to add (to) the labour force in their families, the birth of a son is expected, while that of a daughter is considered a disappointment. This repeated desire to have at least one son has an adverse effect on birth control and planned birth. A woman with many children around her naturally finds it too difficult to participate in any productive labor. Another thing hampering a working woman is her involvement in household work. This prevents many women from full, wholehearted participation in public services.

TABLE 5 Average Marriage Ages of Guangdong Peasants, with Changes over Time (First Marriages Only)

	Pre-1940	1940-1949	1950-1958	1959-1967	1968	1969	1970	1971	1972	1973-1974	(1968-1974)
					Females						
Ch'iao[a]	17.0	--	--	--	--	--	--	--	--	--	--
(N)	(?)										
Worth	18.6	19.2	19.5	20.5	--	--	--	--	--	--	--
(N)	(129)	(118)	(136)	(73)							
Salaff	18.4	18.8	20.7	22.2	--	--	--	--	--	--	--
(N)	(8)	(10)	(8)	(16)							
Parish-Whyte[b]	--	--	20.0	20.9	20.8	21.0	21.2	20.8	21.3	21.4	(21.1)
(N)			(12)	(31)	(16)	(11)	(10)	(13)	(17)	(19)	(86)
					Males						
Ch'iao[a]	20.4	--	--	--	--	--	--	--	--	--	--
(N)	(?)										
Salaff	21.5	21.0	23.6	25.3	--	--	--	--	--	--	--
(N)	(8)	(10)	(8)	(16)							
Parish-Whyte[b]	--	--	24.5	25.3	24.9	26.0	24.0	24.1	24.7	25.3	(24.8)
(N)			(13)	(29)	(16)	(12)	(11)	(17)	(18)	(22)	(96)

[a] Ch'iao's data refer to the double cropping rice region circa 1930, not to Guangdong specifically.

[b] All cases given in the interviews to illustrate especially early or late marriage have been omitted from these figures.

Sources: Ch'iao Ch'i-ming and Wang Chung-wu, "Population: in *Chung-kuo ching-chi nien-chien* [Chinese economic annual] 3d edition, vol. 1 (Shanghai: Commercial Press, 1936), p. B-27; Robert M. Worth, "Recent demographic patterns in Guangdong province villages," unpublished paper. Information is from 456 women interviewed in 1965 in Macao about their own marriage ages. The raw data supplied by Dr. Worth has been recomputed to fit our periodization. Janet W. Salaff, "Youth, family and political control in Communist China" (unpublished dissertation, University of California, 1972). Data recomputed for us by Dr. Salaff.

8 sets of clothes before the marriage can be consummated.[2] Literature on the current birth-planning campaign complains that "old people with feudal ideas believe in raising big families with numerous sons and daughters, particularly the former" (Sun Xiao-fen 1980). Thus, in the press as well as in interviews, there is the suggestion of major changes combined with nagging problems that resist government directives.

How is this pattern of variability in change to be explained? Some new conditions have led to positive change in China, just as they have in many other developed societies. Increased health care and a lower death rate combined with greater security of income have reduced the need to have many children to guarantee future well-being. Widespread education and communication have sensitized farmers to these changed conditions. Similarly, parental authority has been weakened by the declining control they exert over children's economic opportunities. However, this control has been weakened less by expanding urban opportunities than by the shift from private to collective land rights.

Three other sets of conditions help moderate the effects of increased health, security, education, communication, collectivization, and potential central control. First, families continue to be significant income units, housing units, child care units, and welfare units, and rewards for men tend to be greater than those for women. For example, families in collective farms are paid neither equally nor according to need but according to how much their members--especially their men--work. Being physically stronger and uninhibited by child-care duties, men earn a quarter to a third more than women. While sons stay with and support their parents, daughters marry and live with their in-laws once they grow up. This support is critical, since there is no general old-age assistance program in the countryside. Only those with no sons can rely on the collective, and the level of support it provides is minimal. Daughters are not obligated to support their parents and usually do not. Since families with many laborers are more than twice as well off as those with few laborers, and since parents have to rely on their sons in old age, parents have been understandably eager to have several sons (see Blecher 1976).

Married sons also have reason to want their parents around. Virtually all rural housing remains under private ownership. With no mortgage program for houses, the average family has to save 10 years or more to build a house. Young men beginning their married life must rely on their parents for housing at first. A frequent practice under such circumstances is simply to wall off a room or build a new room abutting the old family home. Also, with more young mothers working in the fields during the day and only approximately one-fifth of the villages having child-care facilities, grandmothers' assistance in cooking, cleaning, and tending children is most welcome. Both grandparents and young children can help cut grass on the hillsides, feed the family pigs and chickens, weave mats, sell vegetables in the free market, and do other tasks in the private sector. This is the source of roughly 30 percent of the family's total income and an even larger percentage of their day-to-day cash income.[3]

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[2] With a 1979 annual income of only 510-560 yuan for an average family of 4.5 members, and with half this sum consumed directly in grain, it would take several years' savings combined with loans from kin and friends to pay such "engagement fees" (caili qian) to the bride's family--which is exactly the complaint of the letter (Beijing Review 1980 (27):6-7; see note below). In Guangdong Province in the early 1970s, when incomes were somewhat lower, payments to the bride's family averaged about 200 yuan.

Having a large, prosperous household can also help with the costs of education and reduce the risks of health care. Except for the very poorest households, which receive tuition remission, all other households must pay tuition and book costs at every level of education.[4] Contributions to cooperative medical insurance programs are probably less than 2 percent of household income, and major medical expenses and board costs at a hospital are typically paid by the patient's family. This combination of family housing, income, welfare, and other forms of mutual aid continually remind farmers of the role of the family and particularly the central role of its men. These features make the continued emphasis on tradition in practical and ritual realms less surprising.

A second set of factors modulating the pace of change, in somewhat ironic ways, involves the pattern of women's work. Attempts at more direct administrative intervention in the affairs of families and women were halted at the end of the marriage reform campaign in 1953. It was then suggested that change would come of its own accord simply through education, persuasion, and the increased power of women who entered the labor force. As elsewhere in the world, that hope has proven elusive. Even though grandmothers help, most young mothers face the familiar double burden of labor in the fields during the day and responsibility for most of the family chores once they return home. The vivid images Jack Chen provides (1973) of men active in local affairs failing to help their wives with domestic chores could well fit many other villages. This bind in which women find themselves emphasizes the advantages of birth control. Despite the benefits of a large household, women with at least one son soon begin to complain that raising children is a great burden.

The burden of women's dual responsibilities did nothing to improve bride purchase arrangements, however. Much as in West Africa, the increased value of women's labor has kept bridewealth payments from groom to bride's family equivalent to several years' income, although the dowry, which traditionally accompanied the bride, has virtually disappeared (see Boserup 1970; Goody and Tambiah 1973).[5] Now, current financial transactions at marriage more nearly approach the proscribed marriage-by-purchase system than ever in the past. Nor are current work and residence arrangements favorable to women's village leadership roles. Although marriages within the same village have increased, most brides still leave their home village at marriage. In their husbands' villages they are slow to build the alliances that would lead to political office, in part because they are outside the men's social groups and in part because women's social groups are slow to form when women are dispersed among male laborers during the day and busy with their own housework in the evening (Diamond 1975).

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[3] Beijing Review 1980 (27):6-7 reports a 1979 annual per-capita collective income of 83.4 yuan combined with a household sideline production income of 30-40 yuan per capita. The latter is thus 26-35 percent of total income in cash and kind.

[4] If the costs reported for one Guangdong commune are typical, primary school tuition, books, and stationery would average about 1.5 percent of total family income per pupil (see Parish and Whyte 1978).

Third, government efforts to introduce change are hindered by strong village social solidarities. In most places, the effective unit of production and income sharing is a production team of only 30 to 40 households organized around a preexisting small village, which may be part of a single kinship group. Leaders are native to their villages; they are kinsmen and long-time neighbors of the people they lead; they receive little or no extra pay for their work; and they can expect to spend the rest of their lives in the same village, often holding office for only a few years. With the possible exception of the party secretary in the larger unit, the brigade, of almost 300 households, there is minimal differentiation between leader and led. This commonality of status and interests among villagers is further reinforced by strict migration laws, which keep men in their home villages, and by the high rate of intra-village marriages, which now keeps women near home as well. Although some inequalities remain, collective payment systems have narrowed sharp income differentials that would separate one family from another. Concomitantly, collectively held land has given all families in a production team a common set of economic interests. These commonalities as well as their cumulative years of experience in forging payment systems, grain distribution systems, work arrangements, and so on have given peasants a new sense of collective unity.[6]

While providing incentives for collective farming, this comparative unity of purpose does not necessarily support all government goals. Unity within small collective units can inhibit cooperation with larger collective units. For instance, the central government tried to enlarge collective units, first in 1958-1959 and later in a few places in 1968-1969; efforts to resist these attempts by small production units, struggling to protect their own land, water, and animals or trying to usurp that of others, resemble conflicts that were frequent between villages before 1949 (see Parish 1976). Similarly, in model villages, leaders identified with national goals and compelled villagers to pursue them. However, in most villages, leaders were unable to force unpopular programs on their neighbors, friends, and kinsmen. When forced by the government to do so, many resigned, thereby exposing a weak link in the system of authoritative control (Alley 1973).

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[5] Traditionally, the typical Chinese peasant married within an indirect dowry system, whereby the bride's family used cash received from the groom's family to buy furniture, bedding, and other goods to furnish the room or rooms of the new couple.

[6] Chinese collective units (teams) appear to have done better than their Soviet counterparts (kolkhoz) in creating unity and enthusiasm for collective farming. The Soviet units have suffered from their large size (now about 400 households), outside leadership on the state payroll (instead of local work points), rigid central direction, and a negative history of low state prices and forced collectivization in the 1930s and 1940s.

Furthermore, ideological control is weakened by the inability of most villages to sustain political study groups in the face of more practical concerns of peasant life. Even in the early 1970s, when radical policies still predominated nationally, only one-fourth of all villages in Guangdong had regular political study. As a result of the internal unity of villages, the inability of leaders to identify totally with the bureaucracy above, and the difficulty of ideological penetration, social changes tend to be decided in terms of the collective interests of villages and villagers rather than according to some unified administrative or cultural norm.

The study of 63 villages in Guangdong Province illustrates this pattern. Presumably, villages with more party members, political study groups, broadcast networks, and full school enrollments would be more attuned to central values and programs of social change. However, they were in fact no more likely than other villages to follow such government prescriptions as low bride prices, equality between husband and wife, extensive birth control, or simple rituals (Parish 1979). Rather, response to government ideals was predicated on specific village conditions. Prosperous villages offered low bride prices because families anxious to get their daughters into such villages had to accept a smaller price. Villages with little land were more likely to restrict their birth rate. Villages were responsive neither to government programs nor to broad political and cultural trends, but rather to locally defined costs and benefits.

One may object that this judgment is premature. With more time, it might be argued, old customs will fade away, and government policies now being implemented will have time to take effect. The force of custom or feudal remnants can easily be overstated. The relative stability of family form, marriage practices, and the position of women since the mid-1950s suggests that peasants are attached not to custom but to the rational calculation of their interests in the collective structures created at that time. Similarly, while new policies can lead to change, they can also help strengthen interest in the old structures.

One of these new policies, implemented since the change in administration in 1976, is an emphasis on village or team autonomy. Attempting to correct economic disincentives of the pre-1976 decade, the government now wants smaller production teams to make decisions about the most profitable crops and growing methods, free of outside bureaucratic interference. Attempts to enlarge the team or to move the level of production and income sharing to the higher brigade level are to be abandoned. Attempts by outside administrators to dictate details of crop and labor management are to be abandoned in favor of more market or price responsiveness.[7] Although beneficial to economic goals, this autonomy is less likely to be favorable to goals of social reform since village interests in these matters often diverge from official ideals.

The new policies adopted in recent years also include a greater acceptance of private sideline activities for peasants. Where they were once prohibited in the 1966-1976 decade, private plots and free markets are to be restored in some parts of north China. In the rest of China, where private plots and free markets have existed, private sidelines and marketing are being allowed to expand. For the first time in over a decade, peasants are permitted to market and to compete directly with the state sector in the center of major cities such as Guongzhou. For the first time ever, they can sell surplus grain legally in the free market (Beijing Review (1979)22:4-5; Hua-ch'iao jih-pao (Overseas Chinese Daily 18 Oct. 1979:9).[8] This emphasis on the private sector will tend to increase reliance on the family over the collective.

Other policy changes foster more hope for family change. Small towns and villages have been encouraged to start more collective industries. Potentially, these industries could offer higher and more secure incomes for both men and women separate from the family economy. Villages are encouraged to mechanize, which could help narrow the significance of male-female strength differentials (American Rural Small-Scale Industry Delegation 1977). The question is whether men and women will be selected equally for jobs in industry and for skilled tractor and machine operator jobs in agriculture. If they are not--and the indirect evidence available so far is not encouraging--then these changes, while weakening male dependence on families, may only further increase the gap between men and women, much as Ester Boserup (1970) suggests they do in the rest of the developing world.

The current birth-planning campaign holds more immediate promise for dramatic change in the family and the position of women. Frightened by the slow growth in grain production relative to population, by juvenile delinquency and unemployment in cities, and by the large numbers of youth who are just coming of marriageable age, the Chinese government has adopted a program of one child per family. To successfully implement such a policy, the incentives for peasants must be radically altered. In a few trial areas, those alterations are now being attempted. A family that pledges itself to one child is offered special allowances and benefits while the child is young, including more grain allotments and free tuition in school. The grown child is given preference for higher-paying nonagricultural jobs. And in old-age, when only half of all one-child families will have a son to rely on, better pensions are offered for all. More drastically, the parents of daughters are offered the possibility of moving to their daughter's village,[9] a change that, if it comes about, would begin to undermine the patrilineal obligations on which the traditional Chinese family is based and the surname (lineage) solidarity that has remained important in so many villages in south China.

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[7] Convenient summaries of recent agricultural policy appear in Beijing Review 1979 (16):15-28; 1980 (12):14-20; and Foreign Broadcast Information Service (FBIS) 208(supp. 032) 25 October 1979:1-18. More details on the necessity for team autonomy appear in People's Daily, 16 February 1978, p. 1.

[8] The approximately 30 percent of income derived from the private sector in 1979 is as high or higher than figures for the mid-1950s, when such things were last reported (see Walker 1967).

CITIES

The texture of urban family and community life is strikingly different from that in villages. The functions of family are drastically reduced. There is no significant private sector (see Table 6, line 1c). Each working family member earns his or her income away from home, and men and women are paid equally for equal work, even if some people's work is more equal than that of others (lines 2-3b). More and more old people are self-supporting, with most pensions set at 70 percent of preretirement salaries. The state provides hardship allowances as well as medical insurance for those in the state sector. In larger cities, few families have claim to private housing (line 4c).[10]

There is little possibility for community solidarity and autonomy. State work organizations, employing 78 percent of the total urban labor force, are large, highly bureaucratized, and led by officers with whom workers have no personal ties. Urban neighborhoods of 30,000 to 50,000 residents are organized around a police station containing household registers for everyone in the neighborhood. The police and neighborhood units are backed up by smaller resident's committees as well as small groups. Small groups of 30 to 50 households are supervised by a small group head, typically an unemployed woman in her 40s or 50s who helps disseminate bulletins, calls meetings, leads study, conducts household sanitation inspections, and reports any suspicious activities. Her

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[9] See Beijing Review 1980 (18):26-27; 1979 (46):24; FBIS 136 (13 July 1979):R1; 193 (3 October 1979):S1; and Chi-hsien Tuan 1980, pp. 79-81, and the appended translation of a new Guangdong marriage code.

[10] In this table Guongzhou and other large provincial-level cities are overrepresented, as are intellectuals from the national municipalities of Beijing and Shanghai. These two potential problems are corrected (1) in some tables by reporting figures by administrative level, and (2) in others by reporting weighted summary figures just for data from the Lingnan drainage basin, which covers most of Guangdong and Kwangsi Provinces in the south. It is this weighted sample that most closely replicates official reports of income and employment patterns.

TABLE 6 Urban Work and Residence by Administrative Level of City, ca. 1975

	Commune Seat	County Seat	Prefecture Seat	Provincial Capital	National Municipality
1. % Non-agricultural labor force in:					
a. State units	49%	75%	86%	87%	89%
b. Collective units	47	23	9	11	9
c. Private sector and putting-out work	4	1	6	2	2
	100%	99%	101%	100%	100%
(N)	(110)	(116)	(235)	(614)	(185)
2. % Females age 25-44 employed	97%	91%	92%	93%	94%
(N)	(36)	(45)	(76)	(198)	(69)
3. Monthly income					
a. Females	34Y	37Y	38Y	45Y	51Y
b. Males	44Y	52Y	49Y	59Y	75Y
(N)	(98)	(121)	(244)	(635)	(169)
4. % Housing belonging to:					
a. Work unit	16%	34%	39%	22%	65%
b. City	18	19	23	32	21
c. Occupant	63	40	35	27	15
d. Landlord	3	6	3	19	0
	100%	99%	100%	100%	101%
(N)	(38)	(47)	(77)	(208)	(68)
5. % Families sharing a kitchen with other families	20%	12%	16%	45%	42%
(N)	(30)	(42)	(68)	(201)	(60)

Source: 1972-1978 Urban Neighbor Survey.

reports of suspicious activities may be followed by late-night household register checks in the company of the beat policeman. The neighborhood apparatus helps issue rations, travel permits, wedding permits, and many other necessities of life. One's work organization is equally vital for many of life's necessities, including housing, marriage permits, divorce permits, hardship allowances, purchase certificates for bicycles, watches, and sewing machines, and a host of other needs. Life in the city is bound by a web of bureaucratic control supervised by outsiders.

It is possible to conclude that the all-pervasive bureaucracy and a population mobilized through political study groups explain the change in the urban family and ritual practices. I would suggest, instead, that it is necessary to put at least as much emphasis on the loss of family functions and other nonpolitical constraints in the city as in the countryside. This is particularly true because practices such as footbinding, child brides, and bride prices had already disappeared from cities before the 1949 revolution. Many of the remaining problems, such as mother-in-law/daughter-in-law conflict, equality in household chores, and an equal position for women outside the home, had lower priority and were presumed to be amenable to gradual change through propaganda and the indirect effects of putting women to work.

The great success in cities of the birth-planning campaign and the attempt to delay marriages provides an example of how constraints, other than administrative control and ideological appeal, come into play. First, in the past 15 years marriage has been delayed by sending young teens to the countryside for a stint of two, three, or four years' labor. Second, on returning to the city, those destined for skilled manual jobs entered a two- or three-year apprentice program; earning only a subsistence wage, they were unable to marry, even if there were no formal prohibition preventing apprentices from marrying. Third, a severe urban housing shortage has made it very difficult for a prospective couple to find housing. Even for those who met the administrative requirements of a minimum age of 25 for the bride and 28 for the groom, their work unit or neighborhood housing office frequently had no housing to assign. Marriage had to be delayed for a year or two, unless they were willing to accept a corner of a single-person dorm, a partitioned section of their parents' rooms, or some other makeshift arrangement.[11] These sorts of conditions have led to a steady increase in the average age of marriage in Chinese cities since 1949 (Table 7).

Today, the age of marriage for both bride and groom is determined primarily by their education and the administrative level of the city in which they live (Table 8, lines 1a and 1b). In the higher-level national and provincial capitals, young adults are likely to have spent time in

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[11] A 17 November 1979 Xinhua news release reported the situation of families in cities: "Five to six percent of (them) do not have proper houses at all. They are people who are waiting for houses so that they can marry or who are newly married and are staying with relatives or in public reception centers" Foreign Broadcast Information Service (FBIS) 225 (20 November 1979):15.

TABLE 7 Average Marriage Ages by Year of Marriage of Urban Dwellers (First Marriages Only)

	Pre-1949	1949-1957	1958-1965	1966-1970	1971-1978
Females	20.5	21.5	22.2	23.4	24.6
(N)	(28)	(22)	(99)	(143)	(198)
Males	23.6	24.6	25.6	26.9	27.8
(N)	(27)	(22)	(90)	(129)	(196)

Source: Urban Marriage Sample, 1972-1978.

TABLE 8 Marriage Practices by Bride and Groom Characteristics

	Groom's Education	City Administrative Level	Bride's Education	Party or League Membership		State Employment		Neighborhood			Max (N)
				Bride	Groom	Bride	Groom	Supervision[b]	Tightness[c]	Infrastructure[d]	
	(Correlation)	(Partial Correlations)[a]									
1. Age at Marriage:											
a. Bride	.29*	.10*	.23*	.06	.05	.01	.06	.06	.08	.09	(253)
b. Groom	.32*	.12*	.15*	.02	-.03	.03	.00	-.02	.03	-.09	(277)
2. No Introduction or by Peers Alone	-.07	-.10	.02	.06	-.14	-.02	-.01	-.19	.11	-.26*	(134)
3. Gifts to Bride's Family:											
a. Not requested	.43*	.14	.11	.11	.10	.01	-.13				(61)
b. Of low value	.30*	.01	.03	-.25	-.17	-.01	-.01				(36)
4. Small Wedding Banquet	.18*	.12*	-.01	-.06	-.10	.08	-.02	.02	-.39*	.20	(125)
5. No Special Wedding Rituals	.40*	.10	-.09	.07	.78	.01	.01				(39)
6. Low Total Wedding Cost	.25*	.08	.09	.04	-.17	-.15	.08				(49)

[a] Except for the simple correlations in row 2, partial correlations controlled for groom's education.

[b] Supervision = combined index of neighborhood political study, cleanliness inspections, household registration inspections, criminal sentencing meetings, and dispute mediation.

[c] Tightness = absence of problems in 11 potential areas, including peddling, illegal residence of adults and sent-down youth, black marketing, street cleanliness, and moonlighting.

[d] Services and administration in 10 potential areas, including health care, nurseries, neighborhood enterprises, street sweeping, and birth control work.

[e] Blank cells indicate n 20.

*p $\leq$ .10.

Source: Urban Marriage Sample, 1972-78.

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the countryside, to have become an apprentice for a skilled job, and to face a severe housing shortage. Political and administrative constraints, such as being in the Communist Youth League, working in a state (as opposed to neighborhood) job, or living in a neighborhood that is tightly supervised by the state bureaucracy, have no effects on marriage ages once education is controlled.

Likewise, after marriage, when planning for children, people respond to more than bureaucratic constraints. First, immediately before and after marriage, there are things to be purchased that the modern couple considers necessities--a radio, watches, wooden furniture, bicycles. All but the radio are quite expensive; the bicycle alone costs almost five months of a young worker's salary. The tendency has been to have one child immediately, and to delay the birth of the second until more of the household "necessities" can be accumulated. Second, the burdens of being a mother have been severe. Housing is assigned by the husband's work unit, while creche and nursery care is provided by the mother's work unit. Young mothers must get up early to force their way onto an overburdened public transportation system with a small child on their backs. They face the same crowd coming home and, unless there is a grandparent at home, they also must stand in line to buy vegetables and meat for the evening meal. In a land without refrigerators, shopping is daily and, as the People's Daily keeps reminding us, can be a hassle. Because she must commute, attends after-hours study meetings at least once a week, and generally has no annual vacation, mother's one day off a week is taken up with shopping, cooking, cleaning, mending, and sewing.[12]

Third, many of the positive incentives for having children are missing. Financially, children get jobs only in their late teens and early 20s, and even then they need not turn all of their salary over to their parents. Old-age support depends in part on pensions, not entirely on children. Emotionally, some of the pleasure of having young children around is diminished by the fact that parents who work are not at home when their children are. To alleviate congestion and distribute demands on an inadequate electricity supply, many factories give their workers a day off in the middle of the week, while children attend school all week and are off only on Saturday and Sunday. (One's spouse may be off on yet another day of the week.) Except for the practice of sending urban youth to villages and the rotation of work days, this set of structural conditions appears in all socialist societies, and the results are always the same--a drastically falling urban birth rate. In the Soviet Union, for example, this falling rate, continues in the face of ideological appeals and administrative rewards to have more children. It is not surprising that in large cities in China very few people can recall third pregnancies among their former neighbors or workmates in recent years.

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[12] On 13 November 1979 Worker's Daily reported the experience of one worker: "If we have any spare time, we are so busy eating, drinking, and attending to household duties, that we go through the whole day with aching heads. . . . Every Sunday, members of each family set forth into the streets according to a carefully worked out battle plan. One goes out to buy rice, another coal, another vegetables, another meat. . . . And if all goes well, the tasks are completed in half a day" (cited in the Christian Science Monitor, 14 November 1979, p. 3).

These conclusions receive some additional support from the current pattern of births among married women. As in other societies, husbands and wives with considerable education and higher status jobs in China have considerably fewer children than those who are not so favorably situated (Table 9). This pattern holds both for women married since 1950 and those married since 1963, the latter having been exposed to an intense birth-planning campaign before they had many children. Once a wife's education and her husband's occupational status are statistically controlled, political and administrative control have virtually no effect on the number of children born (Table 10). Unfortunately, cramped housing and an absence of neighborhood services also fail to have much effect on births, once education has been taken into account (Table 11). We are unable to demonstrate statistically what people being interviewed suggest anecdotally. In part, education and living conditions interact, with the more educated living in larger cities with more cramped housing, longer lines at market, and other difficulties of urban life.

The pattern of practices surrounding marriage also reflects the special characteristics of life in large cities and the central role of education. Sixty percent of all couples meet without the benefit of an intermediary. When an intermediary is needed to break through the continuing reserve in male-female relationships, that intermediary is most frequently a friend or workmate: 23 percent of all marriages involve an introduction by a friend or workmate; 13 percent by a kinsman; and only 4 percent by a professional intermediary. Though the groom may give small gifts to the bride's parents, bride prices are generally absent. The groom spends extra money to spice the wedding feast with meat, eggs, and vegetables from the peasant free market, and he hires a taxi to bring the bride to his house on the wedding day. However, other expenditures are modest. The bride and groom wear new clothes, in a contemporary style that can be worn for dressier occasions even after the wedding. Both return to work after their officially alloted three days' wedding leave.

How closely this new, simplified style is followed is determined primarily by the couple's education. Once education is controlled, virtually no other characteristic of the bride or groom or their neighborhood has any effect on the kind of marriage practices followed (see Table 8, lines 2-6).

After marriage, the division of labor in the home is not quite so equal as one might expect from the amount of work women do in the labor force. Husbands do the heavier chores, such as buying and hauling home bags of grain and loads of coal for cooking and heating. As in our own society, wives tend to assume the tedious day-to-day tasks of vegetable buying, cooking, dishwashing, clothes washing, sweeping, mending, and sewing (Figure 1). Some younger, more educated husbands help more, but, for the most part, women are caught in the familiar double bind--a fact

TABLE 9 Surviving Children by Household Economics (Correlations)[a]

	Women Married 1963-1975	Women Married 1950-1975
Household Economics		
1. Wife's:		
a. Income	-.14*	-.09
b. Occupation	-.08	-.15*
c. Education	-.40*	-.30*
2. Husband's:		
a. Income	-.13	-.06
b. Occupation	-.29*	-.16*
c. Education	-.37*	-.24*
3. Household income per nuclei[b]	-.23*	-.04
Town		
4. Administrative level	-.24*	-.18*

[a] The dependent variable is surviving children per currently married women net of years of marriage.

[b] Nuclei = husband-wife and unmarried children and/or single parent-unmarried child sets.

*$p < .10$.

Source: Urban Neighbor Sample, currently married women, married at least three years and age 49 or less. N = 183 women married 1963-75; 320 women married 1950-75.

TABLE 10 Surviving Children by Political and Administrative Control (partial correlations)[a]

	Women Married 1963-1975	Women Married 1950-1975
Political Control		
1. Wife is:		
a. A Party member	.04	.04
b. A League or Party member	.07	.02
c. An administrative official	.03	.02
2. Husband is a Party Member	.00	.07
3. Neighborhood has frequent political study	.34*	.13
Administrative Control		
4. Wife is a state employee	-.03	-.06
5. Family resident in unit quarters	.08	-.03
6. Neighborhood		
a. Supervision[b]	.07	.06
b. Tightness[c]	-.11	.01
c. Solely unit quarters	.17	.02

[a] Correlations controlled for wife's education and husband's occupation. Dependent variable same as in Table 9.

[b-c] See Table 8 for definitions.

*$p \leq .10$.

Source: Same as Table 9.

TABLE 11 Surviving Children by Urban Amenities (partial correlations)[a]

	Women Married 1963-1975	Women Married 1950-1975
Housing		
1. Family residence:		
a. Nuclei per room[b]	-.07	-.18*
b. Ideal-actual number of rooms[c]	-.07	-.11
c. Households per kitchen	-.03	-.06
d. Households per toilet	.02	.01
e. Piped water absent in building	.05	-.02
2. Neighborhood housing scarcity	.11	.15
Neighborhood Services		
3. Infrastructure weak[d]	.07	-.04
4. Lines at market common	-.14	.01
Town		
5. Administrative level	-.09	-.10

[a] Correlations controlled for wife's education and husband's occupation. Dependent variable same as in Table 9.

[b] Nuclei = husband-wife and unmarried children and/or single parent-unmarried child sets.

[c] Ideal = a separate room for married couples and for teenagers of each sex, except that a grandparent may live with teenagers of either sex.

[d] Inverse of the scale in Table 8.

Source: Urban Neighbor Sample, currently married women, married at least three years and age 49 or less. N = 183 women married 1963-1975; 320 women married 1950-1975.

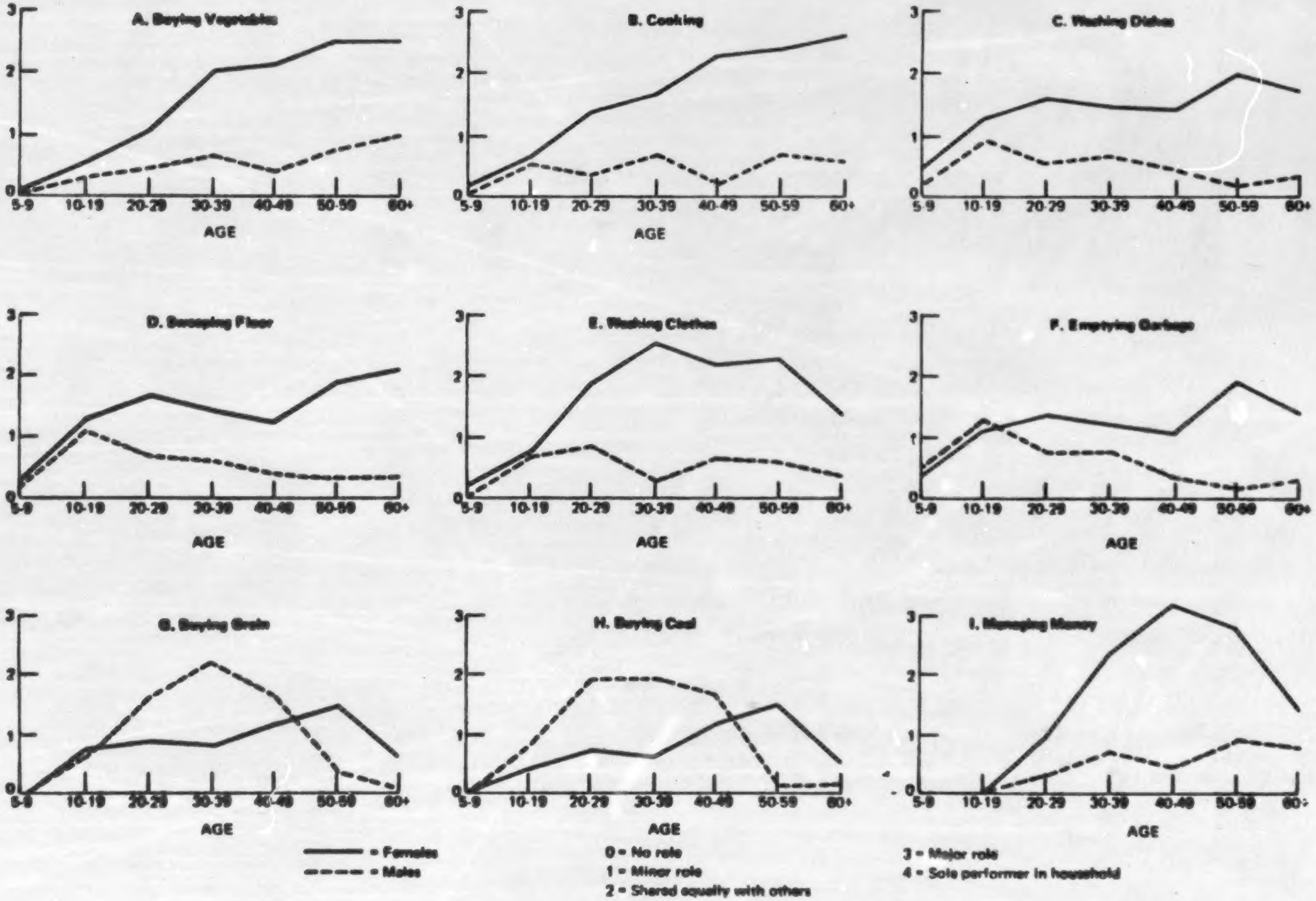

FIGURE 1 Male and Female Roles in Household Chores by Age

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that has only recently been recognized in the official press with a call for more service facilities and fast as well as processed foods to help the working woman. The major way women try to cope with this bind is to shift responsibilities to growing children and grandparents. The older the woman and the less regular her outside work, the more likely she is to take on the major burden of household chores. Also by age seven or eight, many children have begun to help buy vegetables, cook, wash dishes, wash their own clothes, and sweep. Coming home from school in the mid-afternoon, they often start the rice or other staple food cooking (see Figure 1).

While of great help to the working mother, unsupervised children in the home after school have become somewhat of a problem. In the late 1960s and early 1970s, youth sent to villages drifted back into the cities illegally, drifting aimlessly among each others' houses and up and down the street. In time, younger siblings were infected as well. In a political climate critical of teachers, with an absence of rigorous examinations, and with students who despaired of having any career other than a life in the countryside, school morale and discipline disappeared. Students turned to smoking and breaking school windows; pickpocketing, bicycle theft, and other petty theft increased. There were gang rumbles over girls and turf--the only saving grace being that it was sometimes done in style, the loser buying the winner drinks or a meal. Compared with American cities, the level of juvenile disorder was still minimal, but it was a great shock to Chinese parents, who were accustomed to social order and an obedient teenage population. The situation appeared to improve in 1975, when urban youth were more systematically rotated from the countryside after a stint of two or three years' labor, and again in 1977, when exams, teacher authority, and school discipline were restored. In 1979, when most middle-school graduates were no longer being sent to the countryside and urban employment opportunities were inadequate, juvenile crime accelerated. It has required vigorous control activities and increased neighborhood employment to bring the situation under partial control.

Relations with older family members are less problematic. Grandparents continue to reside with at least one married child, and in most instances, that child is a son, even if there is a barely perceptible trend toward residence with daughters (Tables 4). As in the countryside, the young working mother is grateful for grandmother's help with chores and child care (Figure 1). Most grandmothers seem happy to give this assistance, even though their authority in the household is diminished. They sometimes even have pensions of their own, which could make them independent. In some households, there is tension between daughter-in-law and mother-in-law, leading some grandmothers to say that they would prefer to live with their own daughter rather than their son's wife. As we have already seen, this new pattern of residence is a minor trend.

There is more drastic change in the realm of ritual. In large cities, cremation is common--a practice objected to by some old people but now accepted by the young and the middle-aged. Worship of the ancestor's ashes is rare, and enough grave sites have been displaced by farming so that worship at ancestral graves is increasingly impossible. Not only ancestor worship but also most other traditional religious and festival activities have disappeared from the home. The traditional religious lunar new year continues to be the most important festival of the year, providing extra rations like sugar and peanuts as well as three days off from work. During this time family and friends continue to visit back and forth, even if with fewer customary touches like ancestor worship and lucky money envelopes for children. The second biggest festival is the new National Day on October 1, which again provides special rations as well as two days off from work and special entertainment in public parks. The only other days off during the year are one day at the solar new year on January 1 and one day at International Labor Day on May 1. Since there is no annual leave time for most workers, often these public holidays provide the only relief from the continuous six-day work cycle. Accordingly, most emigres report that the most important desideratum for them was not whether a holiday was traditional or modern but simply whether it provided relief from the drone of work and something a little better to eat.

There is much in the contemporary urban scene that denudes the family and its rituals of their traditional meaning. Yet a core loyalty to one's immediate family remains. Even when they have moved away and when parents have an adequate pension of their own, married children still send token amounts of money in continuing recognition of their loyalty and obligation to the parents who raised them. On holidays and days off, when visiting occurs, it is most often among siblings and among parents and children. The range of family obligations, although drastically shrunken, are still very much there.

The separate identity of the family is seen most clearly in the sharing of kitchens. In large cities, many families share a kitchen with two, three, or four other families in the same building (Table 6, line 5). This sharing is the most frequent source of conflict among neighbors. To eliminate conflict as well as congestion in a sometimes dingy cubicle, one might think that adjacent families would simply cook and eat together, especially when the meal is no more than rice or noodles and a dish or two of vegetables. There are no known instances of such sharing, and when queried about such an arrangement, people think it is a ludicrous idea. The family still remains distinct under almost communal living facilities. Subsequently, there is an irreducible core of family loyalty that people find supportive even in difficult environments.

CONCLUSION

Overall, as we should have realized all along, it can be said that neither Chinese peasants nor urbanites are automatons responding to simple bureaucratic commands or ideological appeals. The relationships between government appeal and popular response are much more dynamic, depending on the particular circumstances of each person's life. If we are to understand Chinese patterns of social change, we must understand the circumstances in which each sector of the population is involved. For peasants, the most salient circumstances are the high solidarity of the collective and village community combined with a continuing central role for individual families. For urbanites, the salient circumstances include rural work stints for youth, cramped housing, long hours of work for women as well as men, minimal salaries relative to rising expectations, and sparse and time-consuming urban services--circumstances that require radical adaptations but that leave intact and even support certain core family loyalties. Only as we begin to understand these circumstances do we begin to grasp the full texture of Chinese social life and social change.

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Part 5
Collaborative Research on China's Population

Issues and Problems in Chinese Population Research: A Panel Discussion and an Open Forum

Moderator: *Ansley J. Coale*
Panelists: *Mary Brown Bullock, Paul Demeny, Leo Orleans, William L. Parish,* and *H. Yuan Tien*

The panel discussion and the questions from the floor covered a number of areas: explanations for Chinese fertility, the birth planning-program and male contraceptives, problems of doing research on China's population, and policy implications--for China and the United States--of such research.

Ansley Coale wondered whether lower frequency of intercourse might explain low Chinese fertility, observing that both men and women seemed to work very hard, possibly having frequent separations and reduced opportunities for intercourse. Ray Ravenholt seconded this, arguing that there is a lack of sexual titillation in China. Ronald Freedman thought the hypothesis unlikely, pointing out that the Chinese population on Taiwan was no different from the rest of the world in interest in and openness about sexual matters. Pi-chao Chen added that 12 percent of the abortions in Katherine Ch'iu Lyle's study in Tianjin involved unmarried women, suggesting that reduced libido is not a factor. The high rate of premarital abortions, it was argued, was due to restrictions on marriage.

William Parish suggested that there are cross-pressures on the Chinese people, and that increasing the availability of consumer goods and housing would have a positive effect on fertility. Pi-chao Chen then stated that the Chinese fertility decline was unusual: conventional conditions for decline, particularly a higher level of socioeconomic development, do not exist. Parish disagreed. He contended that the mechanisms underlying the decline are entirely conventional, having to do with the fact that women have to work intensively for long hours every day, especially in urban areas. In rural areas, too, most agricultural labor is left to women, in contrast with most other developing countries. In addition, he noted, 70 percent of adults in the countryside are literate, although improvements in the quality of education are certainly possible.

Discussion turned to the birth-planning program and the use of the male contraceptive gossypol. Sheldon Segal explained that gossypol reduces sperm count and motility, as has been verified in studies in Austria and Brazil. Some studies show that it also reduces the amount of potassium in the blood, causing the condition of hypokalemia; other studies, however, refute this finding and suggest that variations in potassium levels may be essentially an effect of diet. Impurities in the natural plant substance used are extracted with aniline, leaving some anilinic impurities, which have no effect on gossypol's efficacy. There are five centers in China for preparing gossypol, and attempts are made to meet standards set by the drug administration. A major study of gossypol's effects is being conducted with assistance from the Rockefeller Foundation, using a very large sample and life-table analysis. (Ravenholt noted, somewhat later in the discussion, that the toxicity of gossypol was greater than that of the pill. In his opinion, it would have to be much less toxic than a female method in order to be acceptable. He added that gossypol is also subject to long lead-in and lead-out times.)

In connection with the study of gossypol's efficacy, Ronald Gray observed that training in epidemiology is deficient in China. Leo Orleans pointed out that although the Chinese maintain that the Cultural Revolution resulted in 10 lost years in education, some of the 800,000 students who graduated from universities after 1973 managed to obtain a reasonably good education. Segal pointed out that research was slowly being reintroduced in China in universities; he said this should be encouraged, to avoid its being limited to research institutes.

Segal went on to discuss cooperative research between China and the United States. He pointed out that the Center for Disease Control and the National Institutes of Health have intramural programs that could involve China. The Committee on Scholarly Communication with the People's Republic of China has held a meeting to lay the foundations for cooperative research, but does not have funds specifically to support such research. The United Nations Fund for Population Activities has given China a grant of $50 million. Of that total, $3.5 million over four years is earmarked for demographic research, a slightly larger amount than is allotted for biomedical research. The money is not intended mainly to support scholarly work, however, but to provide hardware, software, and technical assistance. China's Ministry of Education is presently responsible for administering the demographic research funds. Mary Bullock added that research in China is being shifted back to universities and emphasized that in conducting cooperative research, it is desirable to avoid limiting the links to one institution. (See the next section, in which Bullock expands the discussion of procedures for collaborative research with the People's Republic of China.) The National Science Foundation has some research links and expects to bring in the social sciences when further negotiations are conducted in December 1980.

At this point Paul Demeny observed that the protocol provides an awkward framework for cooperative population research because it groups population with biomedical topics. It would be more useful, he argued, if instead demographic research were considered together with other social science areas.

Problems in research cooperation were noted by several participants. H. Yuan Tien noted that one problem is figuring out who in China is authorized to approve any particular arrangement. He said it is often necessary to identify the proper authorities informally as things unfold, discovering appropriate sources one by one, asking the first organization contacted where to go next, in snowball fashion. He has also found that most data have to be obtained at local levels, and often copied by hand. He urged that researchers spend some time in specific regions observing and questioning to get some idea of the systematic errors that creep into data. Parish pointed to the need to be aware of campaigns that bias reported statistics. Bullock said that difficulties in collaboration often arise if it starts after a research project has already been designed and suggested that short exploratory visits to China early in the process of conceptualizing research would be useful.

Several participants noted that the need for accurate data is not generally recognized in China. As an example, one noted that some Chinese researchers found interviews boring because they appeared repetitious and attempted to vary the questions from interview to interview. Coale argued that if the importance of good data were recognized, there could be genuine mutuality of interest with the Chinese, who need accurate data, given such factors as the rather stringent goal they have set of zero population growth by 2000.

Orleans raised the question of the policy implications of demographic research in China. Because demography is in its infancy in China and because of other national priorities, he was skeptical about the practical utility of the types of research that had been discussed. Sophisticated demographic research, he said, was of no more use than research on infertility, which seems quite unnecessary given China's intensive efforts to reduce the birth rate. He asked what government policies would possibly be changed if demographic parameters were known to a greater number of decimal places. He felt that much of the suggested research was premature from the perspective of the Chinese. Coale took up the argument, contending that accurate demographic knowledge is always useful for policy making. It is not possible to make sound decisions or to plan ahead, he insisted, unless one is aware of the facts. Sound regulations on age at marriage, for instance, require good census data on when men and women actually get married. Parish suggested also that good knowledge of the situation could lead the Chinese to reduce the emphasis on the use of the medical system to promote contraception and to concentrate on modifying the costs and benefits in the countryside of having children. Demeny joined the argument, pointing out that the immediate policy implications of research would necessarily involve the causes of behavior and behavioral changes. However, he added, demographic data are necessary to provide the framework within which such behavioral issues can be addressed.

It was noted that the development of effective planning mechanisms and the provision of trained personnel at many levels in China was an important goal. Providing training for Chinese who could later become research collaborators would be useful, but it is not easy for the United States to fund such programs, since under the terms of the protocol the Chinese are expected to pay for any training that benefits them. United Nations Fund for Population Activities will be taking a look soon at the question of training for population research.

At this point Wang Kang of the Chinese Academy of Social Sciences offered some views on Chinese demography and on Chinese-United States cooperation. He noted both the almost nonexistent opportunities in recent decades for the training of Chinese demographers and their limited analytical skills but expressed determination to catch up in a short time. He said he felt that recent events responsible for the lack of attention to demography would not be repeated, since China is now irrevocably following a new direction. He observed that the one-child family is only one of China's population policies; there is concern not only with quantity but also with the quality of the population. It is appropriate, therefore, he said, that the study of population should be seen in the broader context of the social sciences. Population studies are in fact to be institutionalized as one concern of the Institute of Sociology in the Chinese Academy of Social Sciences. He was encouraged to find American friends interested in and concerned about population problems in China, and felt that the lack of academic interchange had gone on too long. Coale thanked Wang for his remarks and said he appreciated the warmth, cordiality, and willingness to cooperate that he had detected in them, reinforcing what he had heard in Beijing.

Demeny observed that collaborative research involves bargaining and mutual accommodation. He stressed that American researchers should be clear and should not bargain away their own interests. Chief among these interests is the need to understand China better. Researchers should continue to pursue basic social science questions, particularly those for which research on China might provide important clues.

Procedures for Collaborative Research With the People's Republic of China

Mary Brown Bullock

American scholars wishing to organize a collaborative research project in China have a variety of routes open to them. These routes include working through the government-to-government bilateral agreements, application to the National Program for Advanced Study and Research in China, inclusion in a university-to-university program, and corresponding directly with Chinese colleagues.

The government-to-government bilateral agreements include research subjects jointly agreed to by both the United States and Chinese governments. These agreements are reviewed periodically and new agendas suggested and added. The research projects under the government bilateral agreements are open to researchers both within U.S. government agencies and individual investigators working in universities or private laboratories. For the best current information on the overall content and scope of the bilateral agreements in the health area, one should contact: Chief, International Cooperation and Geographical Studies Branch, Fogarty International Center, National Institutes of Health, Bethesda, Md. 20205.

The National Program for Advanced Study and Research in China, administered by the Committee on Scholarly Communication with the People's Republic of China at the request of the U.S. government, selects, sends, and supports American research scholars and students in the natural sciences, humanities, and social sciences to work in China. The committee has selected and sent to China more than 60 research scholars during the last 2.5 years, many of whom are in the biomedical areas. Research projects in cancer epidemiology, demography, family fertility, brain physiology, and health policy have been supported during the 1980-1981 academic year. The committee has also selected and sent to China American medical students at advanced stages in their medical training to take courses in both modern and traditional Chinese medicine. The committee will support additional researchers and students working in the biomedical areas during the academic year 1981-1982. Individuals who are interested in the possibilities of support for study or research in China during 1982-1983 should contact: National Program for Advanced Study and Research in China, Committee on Scholarly

Communication with the People's Republic of China, National Academy of Sciences, 2101 Constitution Avenue, N.W., Washington, D.C. 20418.

Doing Collaborative Research: An Informal Summary of Workshop Discussions

Sheldon J. Segal

Although the subject of population-related research in China is extremely complex, I will attempt to organize some points about it under five questions, in an attempt at a general summary of what has gone on at this workshop:

- Why should we promote research on population-related matters in China?
- What research should be done?
- How can this research be carried out?
- What problems should we anticipate?
- How will such research be promoted and encouraged?

First is the question why. One of the last points made in today's discussion is probably one of the most important. We are interested in scientific, objective knowledge, as are our Chinese colleagues. If our collaboration with them, now that the opportunity seems to be emerging, brings about some advancement of knowledge and also contributes to training of people who can undertake further research, that in itself will be a valid justification for such work. China's size has to be acknowledged as one of the reasons why population-related matters are of great importance. It is not clear, however, that what we have learned about the Chinese experience with respect to population growth over the past 15 years can be generalized and applied to problems elsewhere in the developing world. There are certainly unique aspects of its growth. It is a developing country with a very high percentage of women in the full-time labor force. What has been the impact of such characteristics on fertility? There are other, similar unresolved issues.

The second question is what research to do. A recurrent theme in this workshop has been the importance of validating existing data and new data-gathering operations; new operations should include built-in validation mechanisms and should use modern techniques for handling and tabulating data as well as modern sampling techniques--methodologies that seem to meet with some resistance in China. The need for reliable data is felt in both the social and the biomedical sciences--in epidemiological studies, laboratory studies, and social science studies. The desirable studies mentioned are only examples representing the points

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of view of the small sampling of the scientific community represented here.

In my own comments on the biomedical field, I called attention to the importance of considering as a part of population-related research obstetrics and gynecology, including such important areas as the epidemiology of maternal and infant morbidity and mortality and perinatal events. And I continue to believe, in spite of the doubts voiced by others, that infertility is a crucial issue. A country with a one-child family policy has a greater interest in infertility than other countries, because so many individuals are affected when a couple cannot have a child. When two "only-children" marry and prove to be unable to conceive, not only are they childless, but both sets of their parents, in turn, will miss the opportunity of having grandchildren and two family lines will be terminated abruptly. I mentioned also the state of research on contraceptive safety, contraceptive development, evaluation of experience with abortion and sterilization, and various topics that might be called correlates of sexual patterns, including the basic issue of sexuality itself.

In the social science arena, a long list of research themes may be included that correlate various aspects of development with fertility. As I mentioned earlier, the emphasis on the full-time employment of women is one intriguing aspect of the Chinese scene, suggesting possible studies of the conditions of women's employment as well as studies of its effects on family structure in China. In the related area, family planning, evaluation studies are important, including specifically the evaluation of family planning communications. Other general social science topics are: the verification of registration procedures; population relocation, until now a neglected subject of research; and the economic consequences of population growth and fertility change.

The third question is: how does one do research on any of these topics in China? Individual initiation of research is one way to start; initial contacts might be made through a friend or through correspondence, followed by an exploratory trip to China. There is also the possibility of initiating a research venture in China through institutional programs. Many U.S. universities now have collaborative programs with sister universities in China. The Rockefeller Foundation and other foundations have limited programs, usually in the specific areas of interest to the foundation. I am not aware of any private U.S. foundation with a separate China program, with funds available for that purpose alone. Perhaps such foundation programs could be encouraged, but efforts to initiate such programs have not been successful so far.

Also, the Committee on Scholarly Communication with the People's Republic of China of the American Council of Learned Societies, the National Academy of Sciences, and the Social Science Reseach Council, has an important program for undertaking research. It has a limited grant budget, however, and the amount of work that it can support is dwarfed by the need. There may be other groups with nascent programs. The National Science Foundation program will be a governmental program, but one that is very likely to bring in university scholars. The health protocol program on population will probably begin 1981, and that will mean more possible support for Chinese studies in the biomedical sciences.

However planning is initiated, there is general agreement that research on Chinese issues, to be truly cooperative, must be planned jointly with the closest collaboration between our Chinese colleagues and ourselves. We did not discuss language needs in this connection. Is it essential to know Chinese before initiating a project, or are there mechanisms to overcome that difficulty? One possible mechanism is to enlist the participation of students from China or Chinese-speaking students from the United States.

The fourth question is what problems we should watch out for. First, one has to be aware that Chinese scientists may have a certain sensitivity about their possible lack of preparedness for research at the level that might be suggested. This is a problem that must be accepted and dealt with in the best way possible. Second, ethical matters must be carefully considered, whether in the social sciences or the biomedical sciences. Ethical considerations may be viewed differently from either side. Two points of view were expressed about this. One view was that we should apply to studies in China the same principles that we would apply if the studies were to be done in this country. The other view was that there may be differences in the perception of these ethical considerations, and the Chinese view may be equally valid and should carry greater weight. Third, our Chinese colleagues may be sensitive about criticizing existing policy within their country. This is a fact of life that must be recognized. Fourth, there is the need to coordinate, or at least communicate, with other groups or agencies that are undertaking work on population in China. As Western colleagues begin to work in China, we should avoid the melange of scientific activity that results in duplication of effort and the submerging of Chinese priorities in the sea of Western enthusiasm.

The final question is, how will research work be promoted and encouraged? Within the China-United States science agreement, population-related studies (primarily biomedical) are included within the health protocol signed by the U.S. Department of Health and Human Services and the Chinese Ministry of Health. It is possible that other protocols will be developed that will separate biomedical and social science aspects of population studies and allow each area to mature independently. For the moment, having population within the health protocol is certainly more desirable than not having it included at all. I think we should encourage our colleagues who will participate in the forthcoming missions to continue their interest in the broad scope of population-related activities. Both Ambassador Richard Benedick and Dr. Philip Corfman have great interest in the social science aspects of the field and will do everything possible to encourage Chinese acceptance of a broad definition of population studies. (See the paragraph in the preface that describes discussions concerning a protocol in population sciences.)

The protocol, as was pointed out, does not carry any monetary commitment, which is a problem. There will be a need for a new infusion of funds. The UNFPA China program has a large sum of money, but, judging from the comments today, not much seems to be available for new research initiatives. It is not clear to me where the funding for this great activity will come from, and we did not reach any resolution of the problem in our discussion.

Finally, I would like to share with you a quotation that did not come up in in the course of this discussion today but is a favorite of mine. It is attributed to the infamous G-4: "Intellectuals are like rubber balls in a barrel of water. You can push them below the surface, but they always pop up." I'm hopeful and confident that this will happen. Although there are some problems in establishing necessary collaborations and in funding, I think we can be confident that research on China's population, like other intellectual pursuits, will progress upward and onward.

Appendixes

Appendix A

Policy Guidelines and Protocol for Cooperation in the Science and Technology of Medicine and Public Health

The following "Policy Guildeline #1" was summarized and discussed by Philip A. Corfman. The document provides background information and describes procedures for the implementation of joint activities under the U.S.-PRC Program for Cooperation in the Science and Technology of Medicine and Public Health, a protocol signed in 1979 as an activity under the intergovernmental "Agreement for Cooperation in Sciences and Technology." The protocol is included in this appendix.

U.S.-PRC PROGRAM FOR COOPERATION IN THE SCIENCE AND TECHNOLOGY OF MEDICINE AND PUBLIC HEALTH

POLICY GUIDELINE #1

October 1979

I. BACKGROUND

A. Intergovernmental Framework for PRC-PHS Activities

Because of special political and foreign policy considerations confronting both governments in the establishment of bilateral-scientific and technical relations in the normalization process, there was early mutual agreement that this sphere of relations should be carefully developed and generally overseen by a binational body. Within one month of formal recognition, on January 31, 1979, President Carter and PRC Vice Premier Deng Xiaoping formalized this understanding in signing the intergovernmental "Agreement for Cooperation in Sciences and Technology." This agreement set forth general policies for intergovernmental scientific and technological relations and established the U.S.-PRC Joint Commission on

Scientific and Technological Cooperation with responsibility for planning, coordinating, and monitoring all such relations.

The S&T Agreement also made specific allowances for cooperative activities in a number of scientific fields, including health. In the health area, a bilateral accord was developed to formalize plans for this cooperation--the "Protocol for Cooperation in the Science and Technology of Medicine and Public Health" signed by former HEW Secretary Joseph A. Califano, Jr. and the PRC Minister of Public Health, Dr. Qian Xinzhong in Beijing on June 22, 1979.

B. Equality, Reciprocity, and Mutual Benefit

Among the most important general policies set forth in the S&T Agreement are those found in Article I, Paragraph 1; i.e., "The Contracting Parties shall develop cooperation under this Agreement on the basis of equality, reciprocity and mutual benefit." While these concepts are familiar to those staff and scientists who have worked in PHS programs with other similar countries, they require special attention in the establishment of relations with the PRC.

A discussion of the meaning of these concepts within the context of U.S.-PRC health relations may be helpful, although one obviously must rely on some measure of common sense. In view of the admittedly underdeveloped state of science in the PRC, there will necessarily be great disparity in the scientific and technical resources which the two countries can potentially bring to any cooperative activity. Equality--"of the same measure, quantity, amount, quality, and number as another"--in all aspects of scientific activities will probably not be possible in the early stages of the relations and, thus, this principle cannot be pursued rigidly. At the same time, the PHS and PRC scientists and staff must work to establish activities in which both sides can share a fair burden of the work and associated costs.

Closely linked with the word "equality" is the word "reciprocity." Here there should be less difficulty in assuring parity in the mutual exchange of privileges and responsibilities such as those for per diem rates for exchange scientists, facilitation of travel arrangements within each country, and access to the same general number, kinds, and geographic distribution of scientific institutions involved in activities.

"Mutual benefit" is another concept which should present no problem. According to this principle, both parties must seek to assure that both sides are benefiting from the scientific activities. At that point where one party or the other determines that a particular arrangement or activity is not sufficiently beneficial to itself, there must be understanding that the S&T Agreement requires discontinuance of the activity.

Taken together, these three mutually agreed principles provide for the overall tone of intergovernmental scientific relations between the two countries, that of co-equal partners in a common endeavor. These principles are expressed with the understanding that the PRC has significant deficiencies and needs in their scientific establishment and that the U.S. Government has an interest in seeing that the PRC advances scientifically and technologically. However, these principles establish an intergovernmental framework for scientific relations which disallows simple aid and assistance from the USA to the PRC. Rather, it is mutually agreed that both parties will cooperate in activities in which both sides benefit in a cost-effective manner. In this regard, it may be worth stressing that "mutual benefit" is not synonymous with "equal benefit." It is expected, for example, that particular cooperative activities may bring different kinds of benefit to both sides. In general, it is understood that the Chinese will be most interested in working with the U.S. Government-sponsored scientists in activities in which they learn modern scientific techniques and gain experience with the use of western technology. U.S. scientists, on the other hand, will probably have a primary interest in seeing that good research is done on unique aspects of health, health services and disease which present themselves in China and have relevance to both the United States and China. Opportunities for a coalescence of these different interests around cooperative projects will no doubt be limited, but they must constitute the bulk of the activities which are developed.

C. Non-Reciprocal Activities

There is yet one other implication in the framework established by these principles. In the foregoing discussion, it should be noted that careful use has been made of the terms "cooperative projects" and the principle of reciprocity as providing the bulk of U.S.-PRC health activities. However, the PHS and the PRC could develop non-reciprocal projects or activities which bring a preponderance of scientific benefit to one side or the other. Such exemples might be a research project of interest to one side or a request that one side assist in the training of its scientists in a particular technique known to the other side; or, one side may wish to have a scientist come to the other side to lecture on a subject in which it has an interest. Unless these types of activities are linked directly and immediately to another activity in which there is an apparent "mutually beneficial" quid pro quo, they are not considered reciprocal, and according to the implicit terms of the S&T Agreement, the benefiting side must bear the full costs for the activity. Again, for example, if the PRC wishes to have a U.S. Government-sponsored scientist come to the PRC to lecture them on the state of science in an area which is not an immediate part of a cooperative activity, then the PRC must reimburse the U.S. Government for the costs incurred in the activity (e.g., travel costs, per diem, and salary). Section II-C-3 discusses the general procedures for undertaking such non-reciprocal activities.

D. The Health Protocol vs. Other U.S.-PRC Health Relations

The normalization of relations between the USA and PRC creates opportunities for and expectations that U.S. governmental institutions will develop a gamut of relations with the PRC which are comparable with other similar foreign states. While the S&T Agreement and the Health Protocol provide the framework for one very important aspect of these relations, neither of these agreements is intended necessarily to preempt--neither to encompass nor exclude--all U.S.-PRC relations in health.

The Health Protocol focuses primarily upon the encouragement and facilitation of intergovernmental cooperative research and exchanges in the health and biomedical sciences. The activities under this Protocol will constitute the majority of PHS-PRC relations, although it is understood that some PHS-PRC health activities may be undertaken outside the purview of the Protocol. At this point, it is difficult to determine all potential modes of future PHS-PRC health activities. Some will no doubt develop from interactions with PRC scientists who visit this country under private auspices and who may work with academic-based scientists who themselves are working under PHS-supported research grants and contracts. Also, we can anticipate that some multilateral organization projects (e.g., WHO) will bring PHS and PRC scientists together in comon efforts. PRC scientists are also eligible, apart from the Health Protocol, for all PHS international programs normally made available, on a competitive basis, to the world's scientific community (e.g., research grants and contracts, visiting scientists' programs, etc.). The implementation of the Health Protocol, however, must have priority over and be carefully coordinated with these other potential bilateral health relations (at least within the PHS). Some of the Policy Guidelines provided in Section II are directed at this need for internal coordination of all activities with the PRC, including those undertaken apart from the Protocol.

Finally, it must be clearly understood that the Intergovernmental S&T Agreement and the Health Protocol apply only to activities specifically developed under their jurisdiction. The U.S. private sector or nongovernmental scientific community is not at this time necessarily bound by the terms of these agreements. Universities or private institutions may, for example, engage in activities with the PRC which bring primary benefit to the PRC, such as through simple training programs for Chinese specialists or lecture tours of U.S. experts in the PRC. Concerning such nongovernmental relations, the PHS should be no more or less helpful than it is for other such private-sector international activities.

II. FUNDING AND ADMINISTRATIVE POLICIES FOR PHS ACTIVITIES WITH THE PRC

A. Funding

Three simple principles must apply to the funding of all PHS activities relating to the PRC. Together they provide that U.S. Government interest vis-a-vis the PRC allow for no "short cuts" in the judicious expenditure of PHS resources.

1. All activities funded by the PHS must relate directly to its legislative authorities and provide direct benefit to its programmatic interests.
2. All activities funded by the PHS must be supported from existing or regularly budgeted personnel and dollar resource levels.
3. All activities funded by the PHS must be competitive with other agency activities and have a level of technical and funding priority greater than that for feasible alternative uses of these resources.

B. PHS Communications With the PRC

With the exception of clearly personal communications, all PHS staff are required to channel all communications with scientists and institutions in the PRC through the services of the Department of State after clearance through the Office of International Health. Such communications may consist of letters, airgrams, telegrams, and small parcel-post delivery.

The Office of International Health will take primary responsibility for assuring that these communications are cleared with the other appropriate HEW offices before they are forwarded to the Department of State for transmittal.

Other exceptions to this policy may be warranted from time to time upon the specific approval of the Office of International Health. Until otherwise notified, questions about communications with the PRC and the initial Office of International Health clearance should be addressed to Dr. Robert D. Fischer, Associate Director, Office of International Health, Room 18-90, Parklawn Building, 5600 Fishers Lane, Rockville, Maryland 20857, (301) 443-4010.

C. Administrative Procedures for Undertaking U.S.-PRC Activities

1. U.S.-PRC Joint S&T Commission and the OSTP

As should be apparent from Section I, both the USA and the PRC, at this stage of the normalization of relations, will require special governmental oversight in the development of scientific relations. Part of that oversight is provided by the U.S.-PRC Joint Commission on Scientific and Technological Cooperation called for in the S&T Agreement. Ultimately, the policies established by the Joint Commission will serve as guidance for all intergovernmental scientific relations. The Office of Science and Technology Policy, within the Executive Offices of the President, is responsible for representing the U.S. Government on the Commission and in otherwise establishing U.S. Government policies for this new scientific relation.

2. The Joint Health Committee, the Health Protocol and Annexes to the Protocol

In addition to guidance from the U.S.-PRC Joint S&T Commission and OSTP, cooperation in the field of health will be subject to the terms of the Health Protocol and to agreements reached by the Joint Committee for Cooperation in Health and Medicine. Agreements of the Joint Committee will be periodically documented in Annexes to the Health Protocol. No activity can be undertaken under the terms of the Health Protocol unless it is documented in these Annexes or, in special circumstances, agreed to on an interim basis in correspondence between the two Co-Chairmen of the Joint Health Committee. The Assistant Secretary for Health and Surgeon General serves as the U.S. Co-Chairman of the Joint Health Committee.

3. Clearance of Activities

It should also be recalled that there are two distinct aspects of PHS-PRC relations in health: (1) the majority of activity which will be undertaken pursuant to the Health Protocol and (2) non-health protocol activities. Different clearance and administrative procedures will be applied to these two types of activities. However, as a general rule for the immediate future, all PHS activities undertaken with the PRC must be cleared by the Office of International Health prior to any PHS commitment to the PRC. The Office of International Health will take primary responsibility for assuring that other relevant HEW offices (e.g., Office of the Secretary) and other U.S. Government Agencies (e.g., OSTP, OMB, State) are in agreement with the activity before the PRC is notified of our commitment. Until otherwise notified, questions about clearance of activities can be addressed by memorandum or telephone to Dr. Robert Fischer, Associate Director, Office of International Health, Room 18-90, Parklawn Building, 5600 Fishers Lane, Rockville, Maryland 20857, (301) 443-4010.

A careful reading of the Health Protocol and Annex One to the Protocol will serve as guidance to the bilateral procedures which will be applied to undertaking activities under the terms of the Health Protocol. These documents specify that the Scientific Coordinators will have responsibility for overseeing the development of activities and projects within their area of jurisdiction. The Scientific Coordinators and their staff and/or designees are free to explore the details of any potential activity which has been generally agreed to in previous Joint Committee documents or in correspondence between the Joint Committee Co-Chairmen. However, it is important that no commitments be made for actually undertaking activities until approval by the Office of International Health. In the case of Health Protocol activities, the Office of International Health will not only assure that appropriate U.S. Government clearances have been obtained for planned activities, but that the bilateral clearance procedures for the Health Protocol are also satisfied.

With regard to non-Health Protocol activities or other "non-reciprocal activities" (see last paragraph in Section I-C of this Policy Guideline), it is difficult to identify the precise administrative and clearance procedures which will be applied. Again, the Office of International Health should be contacted as soon as is possible on PHS agency ideas about such activities and no commitments can be made to PRC scientists and institutions until the Office of International Health has given specific approval.

D. Briefings

The U.S. Scientific Coordinators will be responsible for assuring that all staff and nongovernmental participants in U.S.-PRC activities are appropriately briefed on procedures and policy which apply to activities developed in the areas of their jurisdiction. Staff of the Office of International Health will assist in briefing U.S. Scientific delegations to the PRC upon request of the coordinators and where appropriate.

PROTOCOL BETWEEN THE DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE OF THE UNITED STATES OF AMERICA AND THE MINISTRY OF PUBLIC HEALTH OF THE PEOPLE'S REPUBLIC OF CHINA FOR COOPERATION IN THE SCIENCE AND TECHNOLOGY OF MEDICINE AND PUBLIC HEALTH

The Department of Health, Education, and Welfare of the United States of America and the Ministry of Public Health of the People's Republic of China (hereinafter referred to as the "two parties");

Implementing the Agreement on Cooperation in Science and Technology signed in Washington on January 31, 1979, between the Governments of the United States of America and the People's Republic of China (hereinafter referred to as the "Science and Technology Agreement");

Recognizing the existence of mutual interests in the promotion of health and the prevention and control of diseases;

Realizing the advantages of international cooperation in advancing knowledge and in resolving common problems in medical science and public health for the benefit of all mankind;

Desiring to promote cooperation in the science and technology of medicine and public health; and

Desiring to develop better communication and understanding between the medicine and public health communities in both countries;

Have agreed as follows:

ARTICLE I

GENERAL PRINCIPLES

1. All activities pursuant to this Protocol shall be conducted in compliance with the terms of the Science and Technology Agreement.

2. Cooperative activities, where appropriate, will be coordinated with the goals and activities of the World Health Organization.

ARTICLE II

METHODS OF COOPERATION

The methods of cooperation under this Protocol shall include:

1. Exchange of scientists, specialists, delegations and scientific and technical information in the health and biomedical sciences;
2. Coordination of scientific research projects and programs for cooperation;
3. Joint organization of seminars, conferences and lectures;
4. Exchange and provision of biological standards, bacterial and viral strains, reagents and samples, and other materials for laboratory tests and control; and
5. Other methods of cooperation mutually agreed by the two parties.

ARTICLE III

AREAS OF COOPERATION

1. The following areas have been agreed upon for initial cooperative activities:
   - A. Infectious and parasitic diseases;
   - B. Cancer;
   - C. Cardiovascular diseases;
   - D. Public health and health services research;
   - E. Medical information science;
   - F. Immunology; and
   - G. Medical genetics.
2. The following areas were agreed upon for subsequent cooperative activities:
   - A. Reproductive physiology and family planning techniques;
   - B. Pharmacology;
   - C. Industrial hygiene and environmental health;
   - D. Organ transplantation;
   - E. Burns;
   - F. Microsurgery;

G. Biomedical engineering; and

H. Mental health.

3. Cooperative activities may be undertaken in such other areas as are mutually agreed by the two parties.

ARTICLE IV

ORGANIZATION OF COOPERATION

1. The two parties agree to establish a joint committee for cooperation in medicine and public health which shall be responsible for the implementation of this Protocol, subject to the guidance of the U.S.-PRC Joint Commission on Scientific and Technological Cooperation established under the Science and Technology Agreement.

2. The Joint Committee shall be co-chaired by the Assistant Secretary for Health, Department of Health, Education, and Welfare of the United States of America, and the Vice Minister, Ministry of Public Health, of the People's Republic of China, or equal officials designated by them.

3. The Joint Committee shall be composed of an equal number of up to five representatives from each country and shall meet, at times mutually agreed, in the United States of America and the People's Republic of China alternately.

4. The Joint Committee shall hold its first meeting as soon as possible at a mutually convenient time after the entry into force of this Protocol.

5. The Joint Committee shall be responsible for:

A. Establishing the policies and procedures for its activities to be carried out under this Protocol, and consulting on the disposition of the resultant intellectual property and other appropriate matters;

B. Identifying specific areas of cooperation;

C. Planning, coordinating and evaluating cooperative activities;

D. Determining the initiation and termination of cooperative activities;

E. Determining the appropriate documentation for activities of the Joint Committee;

F. Determining the forms of organization and means of communication for each cooperative area.

ARTICLE V

FINANCING

Cooperative activities shall be financed as agreed upon by the Joint Committee.

ARTICLE VI

ANNEXES

All understandings of the Joint Committee with respect to the conduct of specific activities under this Protocol shall be set forth in Annexes to this Protocol.

ARTICLE VII

ENTRY INTO FORCE, DURATION AND AMENDMENT

This Protocol shall enter into force upon the date of signature and shall remain in force for five years. It may be extended or modified by mutual agreement of the two parties.

Done in duplicate in Beijing on June 22, 1979, in the English and Chinese languages, the two texts being equally authentic.

(signed by) Joseph A. Califano, Jr.	(signed by) Dr. Qian Zinzhong

Appendix B

Selected Recent and Current Population Projects Under the Exchange Program of the Committee on Scholarly Communication With the People's Republic of China

Selected Recent and Current Population Projects Under the Exchange Program of the Committee on Scholarly Communication With the People's Republic of China

Year(s) of Research Visit or Field Work in the PRC	Researcher(s) or Exchange Visit	Topic	Publications
1976	CSCPRC* (exchange visit)	Steroid Chemistry and Biochemistry in the PRC	Josef Fried, Kenneth J. Ryan, and Patricia Jones Tsuchitani, eds., Oral Contraceptives and Steroid Chemistry in the People's Republic of China, CSCPRC Report No. 5, NAS, 1977.
1979-80	H. Yuan Tien, CSCPRC Senior Research Scholar	Farm Mechanization and Rural Population Planning	"Age Structures and Fertility Policy," paper presented at China Population Analysis Conference, East-West Population Institute, May 1980.
1979-80	Katherine Ch'iu Lyle, CSCPRC Research Scholar	Mother's Age and Parity and Pregnancy Outcome: Tientain	With Sheldon S. Segal. "Perinatal in Tientsin: 1978," forthcoming in International Journal of Gynecology and Obstetrics.
1979-80	Steven W. Mosher, CSCPRC Research Scholar	Kinship, Community and Social Change in Shun-te, Guangdong, 1930-79	
1979-80	Steven Butler, CSCPRC Research Scholar	Rural Development and Local Administration in China: The History of a People's Commune (includes research on women's roles)	"A Chinese Village Entering the Modern Age," The Washington Post, June 22, 1980, pp. D1, D4. "Women in China Doing the Dirty Work," The Washington Post, October 19, 1980, p. C-2.

BEST COPY AVAILABLE

1979-80	Sulamith and Jack Potter, CSCPRC Research Scholars	Study of Changes in the Roles of Men and Women, Marriage, Kinship Patterns, Guangdong Province
1980-81	Pi-chao Chen, CSCPRC Research Scholar	Birth Planning in X County, PRC. Previous work: Birth Planning in the PRC
1980-81	Leslie Corsa, CSCPRC Research Scholar	Birth Planning in X County, PRC
1980-81	William R. Lavely, CSCPRC Research Scholar	Correlates of Rural Fertility: The Case of Sichuan
1980-81	Margery Wolf, CSCPRC Research Scholar	Women in China
1980-81	Arthur P. Wolf, CSCPRC Research Scholar	Family and Fertility in Rural China

NOTE: Other population research projects on the People's Republic of China involving foreign scholars, mentioned during the workshop are listed below:

William Parish, on marriage and family in the PRC (see "Marriage and Family in the People's Republic," paper prepared for the China Population Analysis Conference, East-West Population Institute, Honolulu, 1980.

Chi-hsien Tuan, on population policy and birth control (see "Birth control techniques in China's family planning program," paper prepared for the China Population Analysis Conference, East-West Population Institute, Honolulu, 1980).

Shao-sian Wang, Charles H. C. Chen, and Carl W. Tyler, "Demographic implications of family size alternatives in the People's Republic of China," paper prepared for the annual meeting of the Population Association of America, Washington, D.C., 1981.

Y. C. Yu, on population projections (see "A projection of the growth of population for China, 1978-2028," paper prepared for the China Population Analysis Conference, East-West Population Institute, Honolulu, 1980).

*CSCPRC - Committee on Scholarly Communication with the People's Republic of China of the National Academy of Sciences, Social Science Research Council, and the American Council of Learned Societies.

Appendix C

Participants: Workshop on Population Research in the People's Republic of China

Dr. John Aird
Foreign Demographic Analysis Division
U.S. Bureau of the Census

Dr. Wendy Baldwin
Center for Population Research
National Institute for Child Health and Human Development
U.S. Department of Health and Human Services

Dr. Judith Banister
Foreign Demographic Analysis Division
U.S. Bureau of the Census

Dr. Halsey L. Beemer, Jr.
Committee on Scholarly Communication with the People's Republic of China
National Academy of Sciences

Ambassador Richard Elliot Benedick
Coordinator of Population Affairs
Bureau of Oceans and International Environmental and Scientific Affairs
U.S. Department of State

Dr. Nancy Birdsall
The World Bank

Mr. Leslie H. Brown
Senior Deputy Assistant Secretary for Oceans and International Environmental and Scientific Affairs
U.S. Department of State

Ms. Brenda Buchbinder
Committee on Population and Demography
National Research Council
National Academy of Sciences

Dr. Rodolfo A. Bulatao
Committee on Population and Demography
National Research Council
National Academy of Sciences

Dr. Mary Brown Bullock
Committee on Scholarly Communication with the People's Republic of China
National Academy of Sciences

Dr. Steven Butler
Center for Chinese Studies
University of Michigan

Mr. M. C. Chang
Worcester Foundation

Dr. John C. Chao
Office of Population
Agency for International Development

Dr. Charles H. C. Chen
Program Evaluation Branch
Center for Disease Control

Mr. Kwan Hwa Chen
Office of Population
Agency for International Development

Dr. Pi-chao Chen
Department of Political Science
Wayne State University

Dr. Lee-Jay Cho
Acting President
East-West Center

Mr. Philander P. Claxton
President
World Population Society

Dr. Ansley J. Coale
Office of Population Research
Princeton University

Dr. Michael Congdon
Bureau of Oceans and International
Environmental and Scientific
Affairs
U.S. Department of State

Dr. Philip A. Corfman
Director
Center for Population Research
National Institute for Child Health
and Human Development
U.S. Department of Health
and Human Services

Dr. Leslie Corsa
Director
Technology & World Population Project
Office of Technology Assessment

Mr. John Crowley
Office of Population
Agency for International Development

Dr. Alice Day
Georgetown University and
Australian National University

Dr. Paul Demeny
Director
Center for Policy Studies
The Population Council

Ms. Jane Durch
Committee on Population and
Demography
National Research Council
National Academy of Sciences

Ms. Rosalie Fanale
Human Resources Division
Agency for International Development

Mr. Tom Ferguson
Bureau of Oceans and International
Environmental and Scientific
Affairs
U.S. Department of State

Ms. Margaret G. Finarelli
Office of Science and
Technology Policy

Ms. Glenda Finch
U.S. Bureau of the Census

Ms. Susan B. Fisher
Population Resource Center

Dr. Ronald Freedman
Population Studies Center
University of Michigan

Ms. Lydia Giffler
U.S. Department of State

Dr. Ronald Gray
School of Hygiene and Public Health
The Johns Hopkins University

Dr. Barbara Herz
Human Resources Officer
International Development
Cooperation Agency

Dr. William Jansen
Office of Population
Agency for International Development

Ms. Martha Johnson
Population Dynamics Division
The Johns Hopkins University

Dr. Marvin Karten
Center for Population Research
National Institute for Child Health
and Human Development
U.S. Department of Health and
Human Services

Mr. Lawrence R. Kegan
Population Crisis Committee

Dr. Haitung King
National Cancer Institute
U.S. Department of Health and
Human Services

Dr. Helen P. Koo
Research Triangle Institute

Dr. Robert J. Lapham
Committee on Population and
Demography
National Research Council
National Academy of Sciences

Mr. Che-fu Lee
Department of Sociology
Catholic University

Mr. Robert Magnani
International Statistics
Program Center
U.S. Bureau of the Census

Dr. Alvin J. Onaka
Office of Population
Agency for International Development

Dr. Leo Orleans
Area Studies
Library of Congress

Dr. William Parish
Department of Sociology
University of Chicago

Dr. J. Y. Peng
International Fertility Research
Program

Dr. R. T. Ravenholt
World Health Survey
Center for Disease Control

Dr. Allan G. Rosenfield
Center for Population and
Family Health
Columbia University

Dr. Sophie Sa
Social Science Research Council

Ms. Martha Sardinas
People's Republic of China and
Mongolia Affairs
EA/PRCM
U.S. Department of State

Dr. Marilyn Schima
Association for
Voluntary Sterilization

Dr. Sheldon Segal
Director,
Population Division
The Rockefeller Foundation

Dr. Conrad Taeuber
Kennedy Institute
Georgetown University

Ms. Patricia Thompson
Office of Population Affairs
U.S. Department of Health and
Human Services

Dr. H. Yuan Tien
Department of Sociology
The Ohio State University

Mr. William Trainer
INR/LR
U.S. Department of State

Professor Wang Kang
Chinese Academy of Social Sciences

Ms. Carol Bradford Ward
Committee on Population and
Demography
National Research Council
National Academy of Sciences

Dr. Nicholas H. Wright
Center for Population Research
National Institute of Child Health
and Human Development
U.S. Department of Health and
Human Services

Mr. George Zeidenstein
President
The Population Council